



**Implications of the content of recent European Union
and African Union policy documents on
the Food Nutrition Security and Sustainable Agriculture (FNSSA) Roadmap**

***Draft Report to the LEAP4FNSSA Work Package 1 Partners
By the Regional Universities Forum for Capacity Building in Agriculture
(RUFORUM) and Wageningen University and Research (WUR)***

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EXECUTIVE SUMMARY

The Joint Africa-Europe Strategy (JAES) developed in 2007 by the 2nd EU-Africa Summit provides a framework for the partnership between Africa and Europe. The JAES defined collaboration to address issues such as climate change, global security and sustainable development. It leverages African potential for fast growth while acknowledging that Europe is the largest African investment and sustainable development partner. The JAES is implemented through Multiannual Roadmaps and Action Plans developed and updated at subsequent Summits. Expert groups have been established to oversee and provide technical and political guidance for the implementation of the Roadmaps and Action Plans. The *Roadmap towards a jointly funded EU-Africa Research & Innovation Partnership on Food and Nutrition Security and Sustainable Agriculture* (FNSSA), launched in 2016, for a duration of 10 years.

The Long-term EU-AU Research and Innovation Partnership for Food and Nutrition Security and Sustainable Agriculture (LEAP4FNSSA) Project commissioned the Regional Universities Forum for Capacity Building in Agriculture (RUFORUM-www.ruforum.org) and Wageningen University and Research www.wur.nl to analyse recent strategic policy papers (or initiatives) ¹ by AU and the EU to assess: (i) their relevance for and alignment to the Roadmap; (ii) ways in which the documents are aligned to the Comprehensive African Agricultural Development Programme (CAADP) and country priorities; (iii) the types of actors involved; (iv) funding and financing schemes, (v) relation to larger regional or international policy objectives (such as the Sustainable Development Goals (SDGs) and Africa Union Agenda 2063), and (vi) propositions for international dimensions of the Horizon Europe Partnerships.

The content analysis of the recent (2018-2019) policy documents revealed:

a) Coherence with the FNSSA Roadmap

1. All policy documents reviewed concurred with the content of the 2016 Roadmap with respect to FNSSA challenges, key features and research priority areas;
2. All policy documents reviewed made reference to the Sustainable Development Goals;
3. Only two (2) out of the twenty (20) recent policy documents prioritised: *Second Biennial Review Report on the Implementation of the 2014 Malabo Declaration on Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods (2019)*, and *An Africa-Europe Agenda for Rural Transformation: A Report by the Task Force Rural Africa (2018)* make explicit reference to CAADP and the Malabo Declaration;

b) Emerging Issues and Recommendations for improvement in the provisions of the Roadmap

1. An integrated approach for FNSSA and climate change adaptation and mitigation is recommended as the fourth thematic area;
2. Digital solutions and gender feature in several EU-AU policy documents and emerge as cross cutting themes;

¹ Outlined in Table 1-page 10 of this report

3. Youth although not explicit in the FNSSA policy documents has been articulated by the *Africa – Europe Alliance for Sustainable Investment and Jobs* , the AUC Human Resource Science Technology special meeting held in December 2019 and the AU-EU Commission to Commission Summit of February 2020. It has implications for FNSSA R&I and should also be considered as a cross cutting theme
4. There are emerging issues and implications that influence Roadmap documentation of challenges, key features, and thematic areas that may be considered in future bilateral engagements between the EU and AU on FNSSA; These include:
 - i. Need for improved capacities and infrastructure for better data collection and analysis that reflects country level policies, regulatory and institutional arrangements for effective implementation of agricultural and food and nutrition security programs and projects
 - ii. Need for a renewed urgency for the domestication of the Malabo Declaration National Agriculture Investment Plans (NAIPs) and Regional Agriculture Investment Plans (RAIPs)
 - iii. Directly involve farmers, cooperatives, civil society, universities and research institutions, and the private sector in policymaking for ownership, responsible investment and sustainable development

The EU policy documents have already identified the possible financing instruments for the EU –AU activities. Ten (10) out of the thirty-three (33) proposed Partnerships under Horizon Europe align to the thematic areas and are potential sources of financing for the R&I FNSSA Roadmap. Other potential funding sources identified in Horizon Europe are, the European Fund for Sustainable Development and External Action Guarantee under the Neighbourhood, Development and International Cooperation Instrument (NDICI) and Instrument for Pre-accession Assistance (IPA III).

The study further sought to establish how supported projects such as LEAP4FNSSA, can help to relate and advance on the FNSSA Research and Innovation priorities. Review of the attributes of ten (10) past projects indicates that these have capacity to: organise and coordinate needs identification; set FNSSA Research Agenda; design action plans, development of projects and programmes to implement the Roadmap; set ethics, standards and quality assurance of the research processes; help towards a better mobilisation and coordination of funding agencies to support R&I FNSSA across the value chain (resource mobilisation); coordination of implementation, monitoring and evaluation; improve knowledge management (storage and retrieval, translation of knowledge, technologies for replication and use across communities); build networks, to facilitate collaboration; build capacity and provide technical support to AUC and its partner agencies to coordinate; support and build capacity of researchers in Africa to undertake research in FNSSA priority areas and generate evidence to inform policy/decision making.

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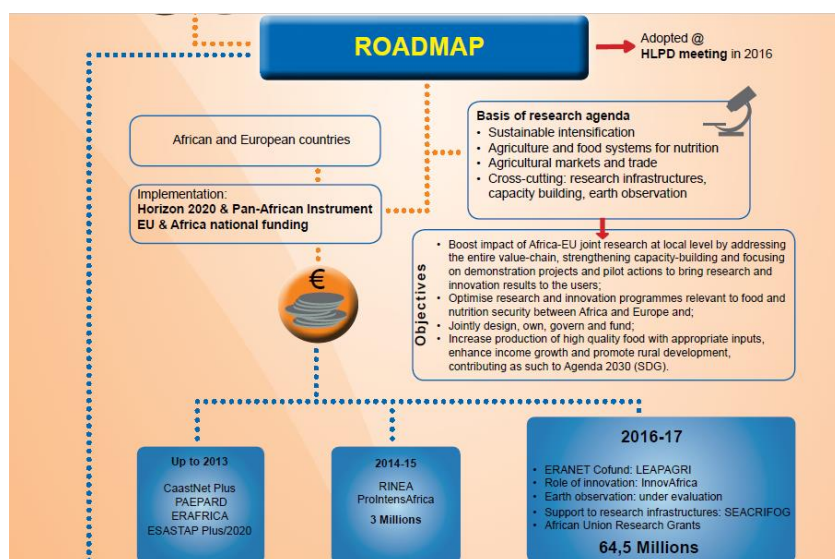
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1 Background

Africa and Europe have had a formal political partnership dating back to April 2000 when the two continents held the first bi-continental Summit in Cairo, Egypt under the auspices of the Organisation of African Unity (OAU) and the European Union (EU). The defining moment of the formal partnership was the 2nd EU-Africa Summit held in Lisbon, Portugal, during which the first Joint Africa-Europe Strategy (JAES) was developed. Since then, the two continents have continued to work closely to address issues such as climate change, global security and sustainable development. The JAES provides the framework for the partnership between Africa and Europe. It underscores mutual benefits, shared objectives and risks. It leverages African potential for fast growth while acknowledging that Europe is the largest African investment and development partner.

The JAES is implemented through Multiannual Roadmaps and Action Plans developed or updated at each Summit. These define the priority areas of cooperation between the two continents for the periods defined therein. The possible instruments and actors in the EU-AU partnership are presented in Figure 1. Expert groups have been established to oversee and provide technical and political guidance for the implementation of the Roadmaps and Action Plans.

Figure 1 Schematic Representation of the Roadmap²



The Roadmap towards a jointly funded EU-Africa Research & Innovation Partnership on Food and Nutrition Security and Sustainable Agriculture (FNSSA) was launched in 2016.

The FNSSA Roadmap provides a framework for improved coordination of research and innovation policies, programmes and funding mechanisms. The Roadmap aims at promoting the food systems approach across the entire value chain, while linking research to innovation and involving all relevant stakeholders for enhanced impact at local level in the FNSSA domain. The main principles driving the partnership are;

² See <https://www.africa-eu-sti-portal.net/en/589.php>

1. Boosting impact of Africa-EU joint research at local level by addressing the entire value-chain, strengthening capacity-building and focusing on demonstration projects and pilot actions to bring research and innovation results to the users;
2. Optimising research and innovation programmes relevant to food and nutrition security between Africa and Europe;
3. Jointly designing, owning, governing and funding; and
4. Increasing production of high-quality food with appropriate inputs, enhance income growth and promote rural development, contributing as such to Agenda 2030 (SDG).

Since the formulation of the Roadmap, several initiatives have been developed as part of implementation. These have included joint initiatives to improve the coordination of research, as well as initiatives to build research capacity and create networks between the two continents as well as initiatives based on the thematic areas outlined by the Roadmap. The Long-term EU-AU Research and Innovation Partnership for Food and Nutrition Security and Sustainable Agriculture (LEAP4FNSSA) Project is an avenue to develop a structured and sustainable platform based on knowledge and research to efficiently and coherently implement the African Union (AU)-European Union (EU) Research and Innovation Partnership with a strong technical backstopping function.

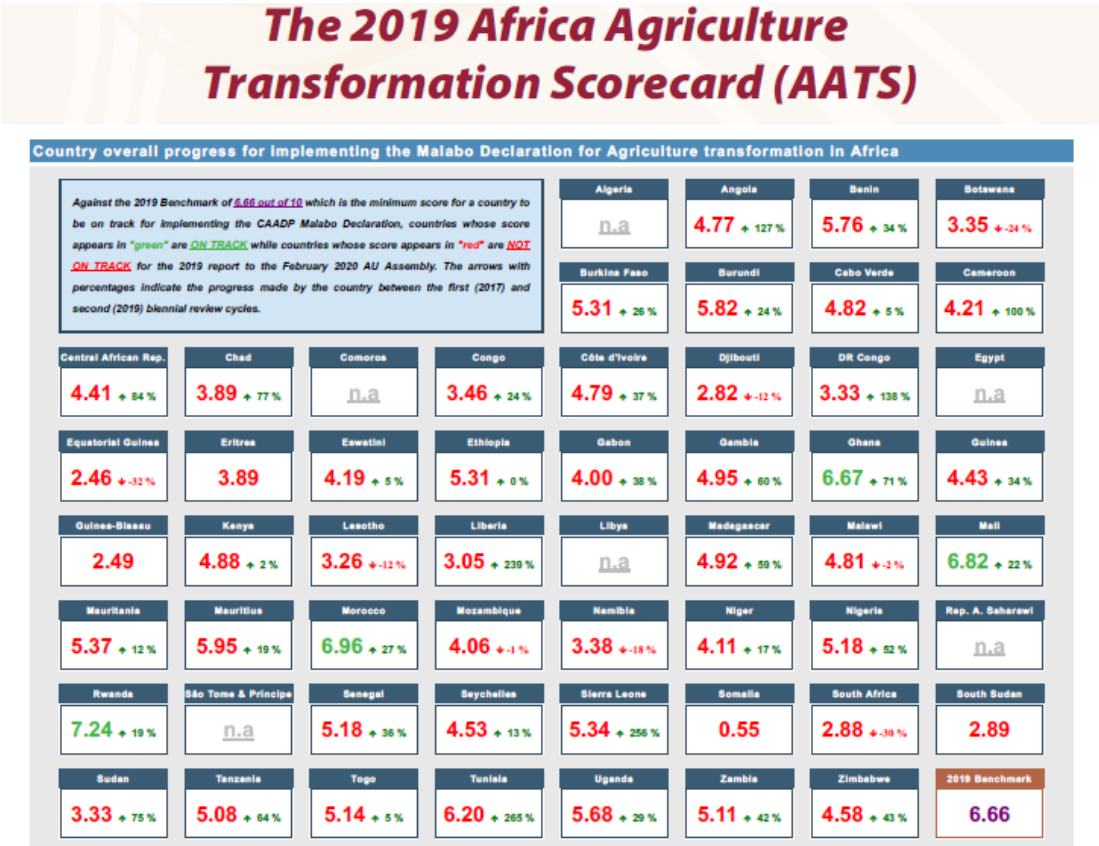
Since 2016 when the FNSSA Roadmap was officially adopted, the AU and EU have developed several policy documents that are likely to influence FNSSA direction and impact on the implementation of the Roadmap. The FNSSA Roadmap, established for 10 years (2016-2026), envisaged short term (2016), medium term (2017) and long term (2018-2020 and beyond) implementation time frames. While the short-term implementation focused on ongoing (pre 2016) initiatives, the medium term and long term was expected to develop new initiatives to operationalise the Roadmap. LEAP4FNSSA, one of the long-term and beyond initiatives is a Coordination and Support Action (CSA) under *Horizon 2020* whose main objective is to provide a tool for European and African institutions to engage in a Sustainable Partnership Platform for research and innovation on Food and Nutrition Security, and Sustainable Agriculture (FNSSA). The LEAP4FNSSA project committed to conduct a desk study on the implications of recent EU and AU policy documents on the FNSSA Roadmap. Parallel to the FNSSA Roadmap is Climate Change and Sustainable Energy (CCSE) Roadmap developed and adopted by the HLPD in 2017.

The Regional Universities Forum for Capacity Building in Agriculture (RUFORUM) and Wageningen University and Research analysed recent strategic policy papers (or initiatives) by AU and the EU to assess their relevance for and alignment to the *Roadmap towards a jointly funded EU-AU Research & Innovation Partnership on Food and Nutrition Security and Sustainable Agriculture* (FNSSA Roadmap).

The documents reviewed confirm the relevance of the Roadmap. No significant divergences or contradictions have been identified between the FNSSA Roadmap, as approved in 2016, and the reviewed policy documents including those launched after 2016. Contents of the reviewed documents potentially offer new and/or additional perspectives and/or entry points that may be useful for a future revision/update of the Roadmap. The output from this desk study is expected to inform a future revision of the existing FNSSA Roadmap.

1.1 FNSSA R&I Context in Africa

In the review of the recent policy documents, the study was cognisant that the documents were formulated against a backdrop of an increasingly volatile climate, health and social economic challenges that may not have been the case at the time of formulation of the Roadmap. Moreover, the review took place in August 2020 when the immediate effects of COVID – 19 pandemic in Europe and in Africa were beginning to emerge, in addition to desert locusts and fall armyworm that had greatly affected several parts of the African continent. Policy documents are designed to address existing and emerging challenges. The number of undernourished people has increased from 775 million to more than 820 million between 2014 and 2018. Among the developing regions, Africa is the most exposed to an increased risk of hunger as a result of climate variability and change. Already African countries are increasingly dealing with shocks resulting from climate variability, extreme weather events (both floods and droughts), migration and other economic uncertainties that increase vulnerability³. Combined with structural and macro-economic challenges few countries in Africa have been able to meet the targets set by the African Agriculture Transformation Scorecard as shown below.



All these validate the need to have a coordinated and concerted effort to establish the key challenges that impact on the transformation of Agriculture and indeed FNSSA. The R&I has the potential to provide relevant knowledge and technologies that will have a lasting impact on FNSSA not only from

³ Second Biennial Review Report on the Implementation of the 2014 Malabo Declaration on Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods (2019)

the supply and production perspective but also on demand and consumption of healthy and nutritious food.

Within Europe, the policy documents ⁴⁵ indicate that in a world of heightened technological competition, not investing in R&I on an EU scale would result in a decline of the EU's global competitiveness with foreseeable economic social and environmental impacts. Research & Innovation (R&I) is a crucial part of the knowledge-based society and one where a strong European dimension should leverage additional funds at national level, without evidence of substitution

1.2 Objectives of the desk study

The review had two broad objectives that highlight the unique opportunities of the EU-AU Research and Innovation partnership for FNSSA namely:

1. To identify and firm up priorities and topics that would qualify for incorporation in an updated version of the FNSSA Roadmap;
2. To assess the extent to which the EU-AU FNSSA R&I Partnership, supported by projects such as LEAP4FNSSA, can help to relate and advance on these priorities.

1.3 Organisation of the report

The report is presented in four sections. Section one is the background that gives synopsis of the assignment, the rationale behind the desk review, the objectives and the R&I context in Africa. Section two provides an overview of the approach and methodology that was adopted in the review of the documentation and the analysis. Section 3-5 are structured along the objective one of the study - identifying and firming up priorities and topics to be included in the updated version of the FNSSA Roadmap. Section 3 is the document review synthesis that maps the Roadmap to the recent EU – AU policy documents for alignment and additional key features. Section 4 outlines the institutional actors as extracted from the policy documents. Section 5 is a broad overview of the funding mechanisms, this section explores Horizon Europe in detail outlining the proposed partnerships, their relevance and application to the EU-AU FNSSA R&I Partnership. Evidence from projects implemented and how lessons can be applied to FNSSA R&I Partnership, objective two of the study, is given in section 6. The report ends with a conclusion.

2 Approach and methodology of the assignment

This section highlights the approach adopted for this largely descriptive content analysis of the recent EU-AU partnership policy documents. It however, starts by giving the boundaries within which the desk study was undertaken.

⁴ Food 2030: European Research for Food & Nutrition Security (2016)

⁵ Horizon Europe – the Framework Programme for Research and Innovation (2018)

2.1 Scope of the policy document review

Food and Nutrition Security and Sustainable Agriculture was identified as a subject of focus by the HLPD as their first priority area for the EU- AU, STI Partnership in 2013. Since then, several policy documents and initiatives have been formulated pre and post 2016 when the *Roadmap towards a jointly funded EU-AU Research & Innovation Partnership on Food and Nutrition Security and Sustainable Agriculture* was formally adopted. The desk review largely focused on recently approved strategic policy documents ranging between 2018 -2020, and development frameworks relevant to the FNSSA domain in both Africa and Europe. The period adopted was majorly because it is reflected as the long-term time frame within the Roadmap. However, in line with the assignment requirement, reference has been made to the Food 2030, the Research and Innovation Strategy in addition to African and European continental frameworks specifically – the Comprehensive African Agricultural Development Programme (CAADP 2004) and the 2014 Malabo Declaration, the Common Agricultural Policy implications on the Green Deal and Horizon Europe documents, Agenda 2063 as well as the Global Agenda 2030 -Sustainable Development Goals formulated in 2015.

Similarly, in assessing how projects can contribute to the FNSSA R&I partnership, the review was limited to the broad Africa-Europe Partnership supporting projects. As such, R&I partnership projects outlined under the *investing in people- education science technology and skills development*⁶ joint priority for 2018 and beyond, for example, Intra Africa mobility were excluded from this review. That notwithstanding, the review acknowledges that the broad projects under the EU-AU Partnership provide learning points as articulated by the Lessons learned on Africa-Europe STI collaboration in the Roadmap.

2.2 Policy document review

In analysing the respective policy and other EU and AU documents, the study adopts a heuristic approach to investigate the following: (i) how and to which extent the recent policy documents relate to the FNSSA Roadmap; (ii) ways in which the documents are aligned to CAADP and country priorities; (iii) the types of actors involved; (iv) funding and financing schemes, (v) relation to larger regional or international policy objectives (such as the SDGs and Africa Union Agenda 2063), and vi) propositions for international dimensions of the Horizon Europe Partnerships that are being developed to include Food Systems, Agro-ecology, Animal Health, or Data for Agriculture. The review was cognizant of the consequences of the current COVID-19 crisis for an EU-AU research and innovation agenda on FNSSA. The base document for the study was the 2016 *Roadmap towards a jointly funded EU-Africa Research & Innovation Partnership on Food and Nutrition Security and Sustainable Agriculture*.

A three-phased approach was adopted in the execution of the literature review in the study as described below.

⁶ <https://africa-eu-partnership.org/en/strategic-priority-areas/investing-people-education-science-technology-and-skills-development>

2.2.1 Document scoping and preliminary categorisation

The research team undertook a rapid scoping to identify recent strategic policy documents and frameworks from Africa and Europe that align to the Roadmap and or relate to Research and Innovation in the domain of FNSSA. The initial scoping was based on existing literature under the LEAP4FNSSA project. Additional scoping was largely based on internet searches specifically the [EUR-lex access to European Union Law](#) for the EU policy documents and [African Union Website](#) for the AU policy documents. Consultations were made with the relevant units in the AUC. The searches revealed that the European Union has several policy documents relevant to the general partnership, R&I and FNSSA policies compared to African Union with a limited number of policies developed since the formulation of the Roadmap. The findings therefore indicate more documents reviewed for Europe than for Africa.

2.2.2 Document categorisation

A rapid assessment of the documents was undertaken to facilitate categorisation. Where available, popular versions and factsheets were reviewed for ease of thematic area groupings. The documents were categorised based on political and technical areas of engagement for FNSSA between EU and AU. Specifically, at the political level, broad policy documents and strategic frameworks were considered. Four main groupings emerged: Africa based, Europe based, Euro-Africa partnership documents and the global and regional frameworks which were used as reference text for the Roadmap. Table 1 is a snapshot of the prioritised documents.

Table 1: Prioritised Documents by Category

Document Category	Africa	Europe	Euro-Africa
Political Documents	Malabo Declaration on Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods (2014)	Communication on a new Africa – Europe Alliance for Sustainable Investment and Jobs: Taking our partnership for investment and jobs to the next level (2018)	
	The African Continental Free Trade Area (2019)	European Commission Post 2020 Common Agricultural Policy (2019)	
		The European Green Deal and Investment Plan (2019)	
		Towards a Comprehensive Strategy with Africa (2020)	
Technical documents	Second Biennial Review Report on the Implementation of the 2014 Malabo Declaration on Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods (2019)	Food 2030: European Research for Food & Nutrition Security (2016)	An Africa-Europe Agenda for Rural Transformation: A Report by the Task Force Rural Africa (2018)
		A Strategic Approach to EU Agricultural Research & Innovation (2016)	New Africa-Europe Digital Economy Partnership: Accelerating the Achievement of Sustainable Development Goals. A Report of the EU-AU Digital Economy Task Force (2019)
		Horizon Europe – the Framework Programme for Research and Innovation (2018)	

Document Category	Africa	Europe	Euro-Africa
		A Farm to Fork Strategy for A Fair, Healthy and Environmentally-Friendly Food System (2020)	
Global/Regional Frameworks	Agenda 2063: The Africa We Want (2014)	Europe 2050: A Clean Planet for all: A European Strategic Long-term Vision for a Prosperous, Modern, Competitive and Climate Neutral Economy (2018)	2030 Agenda for Development: Sustainable Development Goals (2015)
	Implementation Strategy and Roadmap to Achieve the 2025 Vision on CAADP	Towards a Sustainable Europe by 2030 (2019)	
	Science, Technology and Innovation Strategy for Africa (2014)		
	Science Agenda for Agriculture in Africa (S3A) (2014)		
	Third Ordinary Session Of The Specialized Technical Committee on Education, Science and Technology (STC-EST)13 th December 2019 Addis Ababa, Ethiopia		

2.2.3 Document analysis, synthesis and report writing

The FNSSA Roadmap was used as the benchmark for analysis of the recent AU/EU policy documents. Documents were content analysed for consistence and or alignment with the provisions as articulated in the Roadmap⁷. The review was an iterative process that for each policy document reviewed, vertical and horizontal chronological cross referencing was inevitable. A *many to many* relationship analysis was adopted for review of the policy documents with the FNSSA Roadmap as the fulcrum.

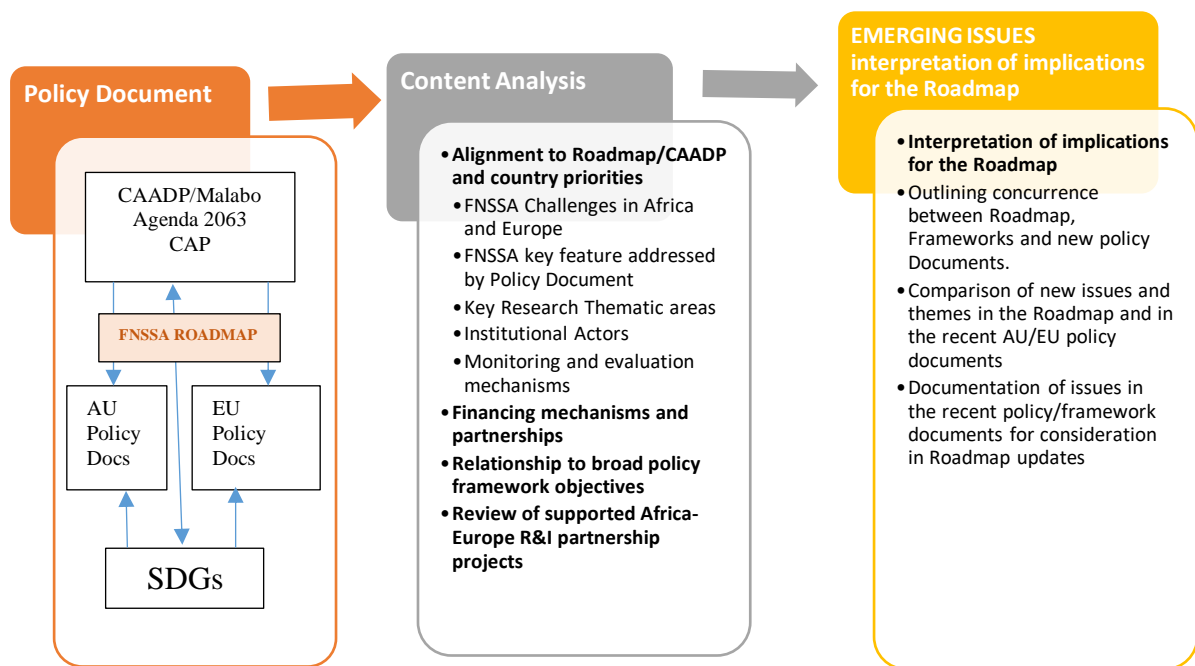
To establish how and to which extent the recent policy documents relate to the FNSSA Roadmap, the review focused on the following provisions outlined in the Roadmap.

1. FNSSA Challenges in Africa and Europe:
2. FNSSA key feature addressed by Policy Document
3. Thematic areas addressed by the Roadmap
4. Thematic areas addressed by CAADP
5. Policy document anchors on broader policy frameworks

The SDGs, Agenda 2063, Europe 2050 and CAADP were evaluated against the FNSSA Roadmap and the recent policy documents. The analysis framework is shown in figure 1 below:

Figure 2: Document Review and Analysis Framework

⁷ For detailed information on content analysis see Krippendoff (2013), *Content Analysis an Introduction to its Methodology*. Sage Publications.



The documents were further analysed for inclusion of thematic areas and priorities already existing in the FNSSA Roadmap. The review was an iterative process, attention was therefore paid to areas of emerging interest at global and regional levels such as climate smart agriculture, youth and women in agriculture/agribusiness, big data and ICTs in agriculture, automation in agriculture and food systems as well as other issues such as resilience of African FNSSA to pandemics such as COVID-19 and other challenges. In light of the AU and EU framework documents, and the UN2021 Summit on Food Systems, specific attention was made to how the food systems approach across the value chain has been integrated in the AU and EU FNSSA policy realm. Priority area selection from the policy documents was complemented by the resolutions made by the 10th EU-AU Commission-to-Commission Meeting held in Addis Ababa in February 2020.

2.3 Assessment of projects supporting FNSSA EU-AU R&I partnership

To assess the extent to which the, supported projects such as LEAP4FNSSA, can help to relate and advance the FNSSA Research and Innovation priorities, the study adopted the approach outlined below.

Firstly, the study reviewed the objectives and main activities of the partnership projects formulated as part the short-term (pre 2016) implementation of the Roadmap, including Science, Technology and Innovation Cooperation between Sub-Saharan Africa and Europe (CAAST-Net Plus), Platform for African European Partnership on Agricultural Research for Development (PAEPARD), Research and Innovation Network for Europe and Africa (RINEA); Towards a long-term Africa-EU partnership to raise sustainable food and nutrition security in Africa (PROIntensAfrica), Strengthening Technology, Research and Innovation Cooperation between Europe and South Africa (ESASTAP) and ERAfrica. Further reviewed were the medium term (2017) and long term (2018-2020 and beyond) programme and projects developed as new initiatives to operationalise the Roadmap. These include: African Union Research Grants – Phase II (2016 and 2018 Calls for proposals); A Long-term EU-Africa Research and

Innovation Partnership on Food and Nutrition Security and Sustainable Agriculture (LEAPAgri); Innovations in Technology, Institutional and Extension Approaches towards Sustainable Agriculture and enhanced Food and Nutritional Security in Africa (InnovAfrica); The Global Monitoring for Environment and Security and Africa (GMES & Africa); Supporting EU-African Cooperation on Research Infrastructures for Food Security and Greenhouse Gas Observations (SEACRIFOG); and Long-term Europe-Africa Research and Innovation Partnership for Food and Nutrition Security and Sustainable Agriculture (LEAP4FNSSA);

Secondly, the study reviewed the recent policy documents to establish the required principles for successful implementation of the EU-AU FNSSA R&I partnership for which partnership projects are best placed to execute. These were later cross referenced with the Terms of Reference for the Africa-Europe High Level Policy Dialogue on Science, Technology and Innovation (HLPD) and the Expert Working Group on FNSSA.

For context and comparative purposes, the review scanned the broad Pan African Program Projects under the Africa - EU Partnership⁸, the implementation framework for The [Joint Africa-EU Strategy](#) (JAES), specifically, under *the investing in people- education science technology and skills development* joint priority for 2018 and beyond.

3 Recent EU-AU policy documents relationship to the FNSSA Roadmap

This section responds to the first objective of this study to give the findings of the policy document review and their relationship to the FNSSA Roadmap. It has three subsections in line with the objectives of the study and the key questions posed by the review. It has two broad sections; (i) the country priorities - CAADP and Europe's Cohesion Policy; (ii) relationship between policy documents and FNSSA Roadmap, iii) propositions for changing several features in the Roadmap.

3.1 Country Priorities

This study sought to establish how the policy documents align to CAADP and country priorities. The country priorities reviewed are those presented in the CAADP noting that several countries have strategic frameworks often expressed as Visions. CAADP presents the relevant country focus for the study. These have been used to assess agricultural transformation targets on the continent by country.

African Common investment areas/country priorities identified in CAADP include;

1. Land and water management;
2. Rural infrastructure and trade-related capacities for improved market access;
3. Increasing food supply and reducing hunger;
4. Agricultural research, technology dissemination and adoption.

Subsequent documents such as the Malabo Declaration highlight food and nutrition security as an important area of focus.

The Cohesion Policy 2021-2027 for Europe, identifies five (5) country priority areas which are a refinement of the 11 priority areas articulated for the period 2014-2020 as follows:

⁸ <https://africa-eu-partnership.org/en>

1. A smarter Europe (innovative & smart economic transformation);
2. A greener, low-carbon Europe (including energy transition, the circular economy, climate adaptation and risk management);
3. A more connected Europe (mobility and ICT connectivity);
4. A more social Europe (the European Pillar of Social Rights); and
5. A Europe closer to citizens (sustainable development of urban, rural and coastal areas and local initiatives).

During the 10th EU-AU Commission-to-Commission Meeting of February 2020, Africa and Europe jointly agreed on the following areas of cooperation;

1. Sustainable growth, trade, investment and digitalisation;
2. Climate change and resilient infrastructure;
3. Peace, security and governance; and
4. Migration and mobility.

The priority areas articulated in the Cohesion Policy focus on the broader EU growth. However, recent EU policy documents in reference to priority area - *A greener, low-carbon Europe (including energy transition, the circular economy, climate adaptation and risk management*, bring out issues to be discussed with the AU to inform future consideration in the revision of the FNSSA Roadmap. For Africa, the priority areas directly come from the CAADP 2004 and the Malabo Declaration 2014, and are therefore fully aligned to the existing Roadmap.

3.2 Policy Document Alignment to the Roadmap

This section provides an overview of the implications of the policy documents on the Roadmap based on the provisions outlined in Roadmap. It is a sectional approach that focuses on challenges, key features, research priority and implementation framework featuring lessons, and the action plan.

While the scoping identified more than 100 policy documents mainly from Europe categorised into technical and political (policy) documents, a few that were of significant relevance to the Roadmap for FNSSA were identified. Content analysis of these revealed the following:

1. All policy documents reviewed concurred with the content of the Roadmap with respect to FNSSA challenges, key features and research priority areas;
2. All policy documents reviewed made reference to the Sustainable Development Goals;
3. Only two (2) documents - Second Biennial Review Report on the Implementation of the 2014 Malabo Declaration on Accelerated Agricultural Growth and Transformation for Shared Prosperity and Improved Livelihoods (2019) and An Africa-Europe Agenda for Rural Transformation: A Report by the Task Force Rural Africa (2018) make explicit reference to CAADP and the Malabo Declaration;
4. The emerging issues from the policy documents for consideration in a future revision of the Roadmap are presented in table 2 below,

Table 2: Recent Policy Documents Emerging Issues and Implications for the Roadmap

1. Towards a comprehensive strategy with Africa
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Emerging issues

- Developing a green growth model
- Improving the business environment and investment climate
- Boosting education, research and innovation
- The creation of decent jobs and value addition through sustainable investments
- Ensuring food security and rural development by developing functional food systems
- Combatting climate change, ensuring access to sustainable energy and protecting biodiversity and natural resources;
- Setting sanitary and phytosanitary standards and the protection of natural resources.
- Promoting peace, security and conflict resolution
- Ensuring well-governed migration and mobility
- Engaging together on the global scene to strengthen the multilateral rules-based order, promoting universal values, human rights, democracy, and rule of law and gender equality

Implications for the Roadmap

- Partner with Africa to maximise the benefits of the green transition and minimise threats to the environment in full compliance with the Paris Agreement
- Partner with Africa to boost the continent's digital transformation - Digital transformation can modernise traditional sectors such as agriculture, contribute to smart and sustainable management of natural resources and efficient agriculture
- Partner with Africa to substantially increase environmentally, socially and financially sustainable investments that are resilient to the impacts of climate change; to promote investment opportunities by scaling up the use of innovative financing mechanisms; and to boost regional and continental economic integration, particularly through the African Continental Free Trade Agreement
- Develop a green growth model to combat climate change; ensuring access to sustainable energy and protecting biodiversity and natural resources
- Protect the population from impacts of climate change such as droughts, floods and other pests and diseases that impact of the ecosystems of both developed and fragile economies
- Improve the business environment and investment climate to create decent jobs and value addition through sustainable investments
- Partner with Africa to rapidly enhance learning, knowledge and skills, research and innovation capacities, particularly for women and youth, protecting and improving social rights, and eradicating child labour
- Promoting peace security and conflict resolution; ensuring well-governed migration and mobility- Reduce conflict to enable people to produce food and engage in activities across the value chain.
- The EU scales up EU-Africa academic and scientific cooperation, including on technical and vocational education and training, agribusiness development and enhancing skills development (also in association with EU businesses) with a view to creating a knowledge society and economy
- The EU to facilitate the mobility of students, teachers, technicians, trainers, and researchers. The EU should also support capacity building within Africa; quality training for teachers and technicians; the development of research and innovation capacities; harnessing the interaction between education, science, technology and innovation for improved learning.

- The EU to support research and innovation, maximising the benefits of regional economic integration and trade ensuring food security as highlighted in the Roadmap and CAADP

2. Communication on a new Africa – Europe Alliance for Sustainable Investment and Jobs: taking our partnership for investment and jobs to the next level

Emerging issues

- Builds on the June 2018 European Council’s conclusions that call for the creation of “a new framework enabling a substantial increase of private investment from both Africans and Europeans
- Focus on Africa’s economic potential and the mobilisation of the private sector
- Focus on jobs for youth responding to Africa’s demographic patterns
- Embrace various partnership frameworks including North Africa under the European Neighbourhood Policy
- The most promising value chains at national and regional level should be identified with priority given to value-adding sectors with a high potential for sustainable job creation, notably for women and youth
- Target investing in people by investing in education and skills notably Technical and Vocational Education and Training, digital skills and competences, and the mismatch between the skills that young people receive at secondary and tertiary level and those needed for their working life
- Ensure support towards building response capacity to emerging human, livestock and crop pandemics and epidemics
- Increasing access to higher education and research institutions
- Strengthen e-infrastructures and the mobility of students, staff and academics across the African continent
- Harmonisation of higher education across the continent will be supported aiming to ensure the recognition of qualifications within Africa and the EU
- The EU will continue to support scholarships and exchange programmes between tertiary education institutions and support knowledge creation in universities to become full actors in the complex processes of innovation

Implications for the Roadmap

- Actors: The European Commission will bring together African and European public, private and financial operators including philanthropists and academia on a sectorial basis to examine the long-term challenges and strategic interests and developments in critical economic areas such as digital solutions, energy, transport and agriculture
- Constant dialogue between European and African partners, increased involvement with the private sector and close consultation with civil society
- It provides a framework for the FNSSA R&I partnership with Universities and other actors in the education value chain.
- Offers great investment opportunity within Africa to address the youth unemployment challenge which is the cornerstone fuelling unsafe migration to Europe and elsewhere in the world

3. The Green Deal

Emerging issues

- Efforts towards circular economies and green and clean technologies and work to decarbonise energy-intensive industries
- Ensure that the ongoing sustainable transition is socially just and leaves no citizen or region behind, while also protecting citizens' health from environmental degradation and pollution, and addressing air and water quality
- These will be premised on research, innovation and development of new technologies, as well as key enabling and digital technologies

Implications for the Roadmap

- It represents the need for an integrated focus; climate change, biodiversity Food and Nutrition Security are interrelated and contribute towards the global ecosystem as a key tenet to meeting the Sustainable Development Goals
- Represents an investment destination with beneficial effects to spur innovation and expand employment opportunities within Europe and Africa within a sustainable future perspective

4. A Farm to Fork Strategy for A Fair, Healthy and Environmentally-Friendly Food System**Emerging issues**

- Challenges: Food fraud, explicit focus on food production, food processing and value addition
- Key Features: Agricultural extension and advisory services
- Thematic areas: climate change adaptation and mitigation, agro-ecology, organic farming, sustainable landscape management and land governance, conservation and sustainable use of biodiversity, prevention of and response to food crises, particularly in fragile contexts, resilience and risk preparedness; Plant and animal health, welfare and antimicrobial resistance.

Implications for the Roadmap

- Calls for a food systems perspective to developing profitable yet sustainably oriented agriculture
- Climate change as a thematic area to be included in the revised Roadmap
- International cooperation is the point of entry for EU-AU R&I partnership for FNSSA
- Provide a section for implementation framework and the mechanisms of the R&I partnership
- Coordination of R&I is treated as an enabler rather than as a focus in the revised Roadmap

5. Food 2030-European Research & Innovation for Food & Nutrition Security**Emerging issues**

- Climate smart and environmentally sustainable food systems
- Circularity and resource efficiency of food systems
- Innovation and empowerment of communities

Implications for the Roadmap

- R&I will play a critical role in making food systems future-proof: more sustainable, resilient, responsible, diverse, competitive, and inclusive

- It validates the need for partnership, the priority areas and further articulates the need for an integrated approach, where food security and nutrition, environment and health are complementary

6. A Strategic Approach to EU Agricultural Research & Innovation

Emerging issues

The Research Strategy core areas are in concurrence with the FNSSA R&I Partnership Roadmap

Implications for the Roadmap

Cross cutting issues to be incorporated in the Roadmap revisions include;

- Systems approaches taking into account the dynamic interactions of the different components of production systems and value chains at various temporal and spatial scales.
- Societal engagement in research and innovation will ensure that research responds to society's needs and facilitate the implementation of research results.
- Information and Communication Technologies (ICT) as an enabler – Digital technologies are developing rapidly and have the potential to transform production systems in agriculture, forestry and related food- and non-food value chains
- Enabling research and infrastructures –due attention needs to be paid to the development, access and maintenance of high-quality research and innovation infrastructures as a key driver for enabling and/or collaborative research
- Establishment of an Africa-wide Agricultural Science, Technology and Innovation Indicator Platform to guide investments in Agricultural R&D as a key enabler for long term planning in Africa

7. An Africa-Europe Agenda for Rural Transformation Report by The Task Force Rural Africa

Emerging issues

- How to boost public and private investments in African sustainable agriculture
- How to facilitate EU responsible private investments
- Boosting intra-African trade as well as exports from African countries
- Identifying the best policies to support African youth working in agriculture, agribusiness and agroindustry
- Africa and Europe are global partners on an equal footing and each region must steer its own development
- Solutions to agriculture will be found beyond agriculture, through a territorial approach to rural development in the widest sense
- Good policy is the key to developing the agri-food sector and rural areas drawing from capacities and experience
- Farmers and the food industry should collaborate to take on the new opportunities that the African Continental Free Trade Area will offer and also, build the regional markets needed for Africa's long-term food security
- Directly involve farmers, cooperatives, civil society, and the private sector in policymaking for ownership, responsible investment and sustainable development

- Modernisation of African agriculture will require major investment in research, involving farmers and their organisations, and adequate policy design.

Implications for the Roadmap

- A demand-led agricultural research programme that responds to the needs and constraints of farmers (paying a close attention to smallholder farmers challenge in Africa) and other stakeholders
- Progress at the necessary scale requires large increase in R&D funding, and flexible regulations that encourage private sector and industry to develop
- Requires working with Multi-stakeholder Innovation Platforms to ensure appropriate and accessible innovations
- Innovation requires an efficient agricultural research system, moving from linear top-down technology transfer models, to co-elaboration based on combining scientific and farmers' knowledge
- Improved innovation systems need to combine teaching (including vocational training), research and extension through a systemic collaboration between all institutions involved (research, higher education and extension services)
- Better coordination with socio-economic research is necessary to tackle the complexity of rural economies
- Governments have the role and mandate to provide strategic leadership, develop policies and funding framework for agriculture food security
- Increase the competitiveness of African agri-food value chains by implementing predictable and coherent policies, political commitment, monitoring joint action and policy coherence, promoting African-EU policy dialogue, and knowledge generation.
- Strengthen and scale up existing value chain initiatives, including from national to regional level where relevant
- Establish an African- EU knowledge sharing platform on value chains
- Establish a Value Chain Fund to address bottlenecks and build vibrant value chain oriented agribusiness
- Support the implementation of the AU continental strategy on geographical indications

8. Second Biennial Review Report of the AUC – February 2020

The Second Biennial Review Report of the African Union Commission on the implementation of the Malabo Declaration is a progress report on resilience and livelihoods. It provides the direction for Africa's agriculture transformation for the period 2015 – 2025, within the Framework of the Comprehensive Africa Agriculture Development Programme (CAADP).

Emerging issues

- Need for improved capacities and infrastructure for better data collection and analysis that reflects country level policies, regulatory and institutional arrangements for effective implementation of agricultural and food and nutrition security programs and projects
- Need for a renewed urgency for the domestication of the Malabo Declaration National Agriculture Investment Plans (NAIPs) and Regional Agriculture Investment Plans (RAIPs)
- Features food insecurity and food safety issues to be included in the country performance checklist with indicators to be considered in the revised Roadmap

- Prevalence of moderate and severe food insecurity in the population
- Country's performance in establishing food safety systems that meet international best practices and the Codex Alimentarius international food safety standards;
- Food Safety Health Index (FSHI) which measures a country's performance in reducing cases of foodborne illnesses
- Percentage reduction in rejected export shipments of food commodities due to food safety violations, disaggregated by the type of violation

Implications for the Roadmap

The review has impact on the themes to be covered in the revised Roadmap and the country level as focus for project and program implementation as well as for monitoring and evaluation.

9. New Africa EU Digital Economy

Emerging issues

- Africa has the opportunity to harness the digital economy as a driver of growth and innovation, but if it fails to grab the opportunities, its economies risk isolation and stagnation
- With adequate investment and suitable reforms, Africa may be able to accelerate growth models, allowing the digital economy to influence all sectors of the economy and society
- Focusing on Agriculture in general as one of the key economic development areas that will benefit from digitization and e-services, the smallholder agriculture can benefit from market information and early warning systems, and governance can be improved through the use of digital civic registries, civic tech, remote sensing and big data, precision agriculture and foresight capacity e-commerce, GIS and earth observation, Land use management and planning.

Implications for the Roadmap

- Data and digital tools are emerging that provide new possibilities for tracing materials throughout the value chain and channelling environmental information to consumers, empowering them at the same time
- Digital systems help integrate information across multiple lifecycles and various stakeholder in the value chain.
- Promote digital innovations designed locally by empowering all relevant local actors (governments, start-ups, research, private sector)
- Support the establishment of local digital innovation centres serving as a co-creation and innovation hub for digital solutions of tomorrow and as a first entry point for foreign investors
- R&I to be integrated and adopted by the digital economy
- Investment in infrastructure that will improve access to safe and affordable digital services as well as development of policies to ensure full digital inclusion and digital equality for women and marginalised communities
- Development of exchange programmes in digital and technological skills to help in reducing the digital gender divide and transforming farming activities from manual to technological

10. The African Continental Free Trade Area (2019)

Emerging issues

- Promote industrial development through diversification and regional value chain development, agriculture and food security
- Cooperate on investment, IPR and competition policy
- Take the necessary measures to reduce cost of doing business to create a conducive environment for private sector development and boost intra African trade-
- enhance competitiveness at the industry and enterprise level through exploiting opportunities for economies of scale continental market access and efficient allocation of resources
- cooperation in quality infrastructure, S&T, development and implementation of trade related measures. Sanitary and Phytosanitary measures
- Sustainable trade (human, plant and animal welfare) and digitalization in accordance with the SDGs

Implications for the Roadmap

- Increased intra African regional trade and better functioning of national and regional markets
- Expanded local agro industry and value chain development inclusive of women and youth
Increased resilience of livelihoods and improved management of risks in the ag sector
- Expanded local agro industry and value chain development inclusive of women and youth
- Increased resilience of livelihoods and improved management of risks in the agricultural sector in line with Agenda 2063
- Agricultural markets and trade remain a key priority to be considered in the revised Roadmap.

3.3 Proposed revisions to the FNSSA Roadmap

This section provides proposed changes to the Roadmap as synthesized from the emerging issues from the policy documents. It is structured on the relevant sections of the Roadmap.

3.3.1 FNSSA Challenges

The Roadmap recognises that although the food and nutrition security situations in Africa and Europe differ in detail, there is substantial convergence for the EU-AU regional agricultural and food production systems, and both subscribe to SDG 2 to end global hunger. The Roadmap further recognizes that despite the substantial convergence between the objectives of African and European regional policies in agriculture and STI and the adoption of the SDGs, there is fragmentation of efforts and knowledge (new and traditional) in the current cooperation between Europe and Africa on Science Technology and Innovation for food and nutrition security. Further still, there is insufficient mobilization to sustain innovation processes.

At the macro level, the Roadmap articulates that ‘the development of an EU-Africa Research and Innovation Partnership on food and nutrition security and sustainable agriculture FNSSA is prompted

by the level of global hunger, expanding nutritional imbalances, and the need for food production systems to sustainably respond to the rising demands of a global population’

Highlighted as challenges to be addressed by the FNSSA R&I Partnership include:

Unacceptably high level of global hunger, the prevalence of undernourishment, and the projected global population growth with associated changes in food habits all underscore the need for world food production to increase and world food systems to change dramatically. Food security implies not only adequate quantity, but also secure access to stable food supplies, food quality beyond its calorific value, and food affordability. In addition, reducing food losses and waste is crucial, FAO estimates around one third is lost in the food supply chain close to the farm in Africa and close to the consumer in Europe. Moreover, the burden on society arising from epidemics of obesity and diet-related non-communicable disease in Africa and Europe speak to the simultaneous need for addressing nutritional security⁹.

These challenges are still relevant to both continents as outlined in the policy documents. Indeed, the policy documents show that scale of the nutrition, education and health challenges facing Africa are enormous - some 60 million children stunted; 375 million people facing severe food insecurity; some 100 million children and young people not in school, and health systems with insufficient trained personnel and finances. In Europe, the policy documents outline an opportunity for a shift to healthier diets and the restriction of the promotion (via nutrition or health claims) of foods high in fat, sugars and salt in order to improve the quality of life, and reduce health-related costs.

The review of the policy documents concurred with the situation analysis made by the FNSSA Roadmap. Synthesised from the recent policy documents for future consideration in the Roadmap are the following challenges.

Table 3: FNSSA Challenges from Policy Document

Identified Challenge	Thematic Area
1. Rising income and global shifts towards consumption patterns	Expansion and improvement of agricultural markets and trade.
2. Under-developed industrial regional value chains and food fraud along the food supply chain	
3. Competitiveness, inadequate levels of investment, low levels of value chain organisation and value added, little export diversification and barriers to expanding trade – domestic, regional, intra-African and international trade, Market fragmentation (CAADP 2)	
4. Recovery and resilience of farmers (COVID-19) 1) foster a smart, resilient and diversified agricultural sector ensuring food security	Agriculture and food systems for nutrition
5. Economic viability of farming and attractiveness to the younger generation	
6. Inequitable growth (rural/urban/ other regions)	
7. Combatting climate change; ensuring access to sustainable energy and protecting biodiversity and natural resources;	Climate Change Adaptation and Mitigation in FNSSA
8. Inappropriate agricultural practices and overuse	
9. Digital solutions, to ensure strong public finance management, including transparency of public procurement and expenditure and the fight against	Cross Cutting <ul style="list-style-type: none"> • Financing FNSSA

⁹ The Roadmap towards a jointly funded EU-Africa Research & Innovation Partnership on Food and Nutrition Security and Sustainable Agriculture (FNSSA), Page 5

Identified Challenge	Thematic Area
corruption and fraud, improved accountability, gender equality and Rule of Law and access to Justice	<ul style="list-style-type: none"> ICT/ Digital solutions for Agriculture
10. Defective rural financial systems and limited physical infrastructure, particularly irrigation.	

3.3.2 Key Features

The review of the policy maintains the 4 features as indicated in the Roadmap but refines them and adds explanatory notes for each. In addition, the review proposes to modify/ broaden feature number four (4) to enabling environment. Details of the revisions are outlined in the table below.

Table 4: The Roadmap Key features

Roadmap Key Feature	Proposed Key Feature from Policy Documents
1. Enhanced coordination of FNSSA relevant research and innovation policies, programmes and funding mechanisms between Europe and Africa, building on past experiences	1. Enhanced coordination of FNSSA-relevant research and innovation policies, programmes and funding mechanisms between Europe and Africa, building on past experiences in Agricultural Research and Agricultural Research for Development to create synergies and optimise investment and identify gaps.
2. Operating across the entire value chain, linking research to innovation, involving all relevant stakeholders	2. Operating across the entire and diversified value chain, linking research to innovation, involving all relevant stakeholders from private sector (including farmers), civil society, government and research organisations for enhanced impact at local level, generating locally relevant innovation and exchangeable knowledge and know-how. <ul style="list-style-type: none"> Promote industrial development through <u>diversification</u> and regional value chain development Set up multi-stakeholder platforms and innovation hubs Supporting sustainable transformation of African and European agriculture
3. A jointly designed, owned, managed and resourced Research and Innovation Partnership	3. Building effective, jointly designed, owned, managed and resourced Research and Innovation Partnership including the Research and Innovation Agenda with a view to driving global action forward; <ul style="list-style-type: none"> Cooperate on investment, IPR and competition policy (African Continental Free Trade Area)
4. An integrated approach, recognising the cross-cutting nature of entrepreneurship, research infrastructures and research and innovation capacity building	4. Create an enabling environment with an integrated approach, that recognizes the cross-cutting nature of entrepreneurship, research and innovation infrastructures, science capacity building and attention to critical policy and market conditions for sustainable agricultural production and food security <ul style="list-style-type: none"> Take the necessary measures to reduce cost of doing business to create a conducive environment for private sector development and boost intra African trade Enhance competitiveness at the industry and enterprise level through exploiting opportunities for economies of scale continental market access and efficient allocation of resources Improving the business environment and facilitating access to finance and business support services to boost digitally enabled entrepreneurship Forging a political partnership focused on building peaceful, stable, well-governed, prosperous and resilient states and societies; cooperation in quality infrastructure, S&T, development and implementation of trade related measures

Roadmap Key Feature	Proposed Key Feature from Policy Documents
	<ul style="list-style-type: none"> Guaranteeing essential skills for all, in education and Vocational Education and Training (VET), to enable citizens to thrive in the digital age

3.3.3 Research Priority Areas/ Key Research Themes

The review sought to establish the extent to which the thematic areas outlined in the Roadmap are aligned to the recent policy documents. The review established that the priority areas as outlined in the Roadmap are still valid. But there is need to expand and refine the thematic areas to include sub-themes from the policy documents and added one sub-theme on climate change in line with the R&I Roadmap on climate change and sustainable access to energy. This expansion will enable the Roadmap to align to policy documents such as the Green Deal, Farm to Fork and the EU Research and Innovation Strategy for Agriculture.

The review upholds the selection process for the priority areas guided by five criteria:

1. Relevance of the research domain to African and European priorities for sustainable agriculture and food and nutritional security (e.g. CAP¹⁰ and CAADP¹¹ objectives).
2. Expected impact of research and likelihood of uptake contributes to solutions and evidence for policy change, to positive agricultural and nutritional outcomes and to significant improvements in economies, wellbeing and resilience.
3. Capacity for joint research in both African and Europeans scientific communities.
4. Scalability of research and innovation impact at national or regional scales.
5. Complementarity to existing bilateral and multilateral collaboration.

The R&I Partnership priority areas are key to providing focus and solutions to challenges in African and European contexts, while also building the relevant R&I capacities for achieving the longer-term FNSSA objectives. The review of the policy documents in concurrence with the Roadmap acknowledges that while specific European and African interests may vary, the scientific agenda and specific R&I activities, to be developed in collaboration between African and European scientists and other stakeholders, should focus on topics where joint efforts have greatest advantage and benefits for both continents.

From the review, the thematic areas identified by the Roadmap still stand out as priorities to be addressed under the EU-Africa R&I Partnership on FNSSA. There are however, additional areas of focus as articulated by the policy documents that may be considered to refine the subthemes. The thematic areas as identified and confirmed as important priority areas for FNSSA Research and Innovation in Africa and Europe are.

1. Sustainable intensification;
2. Agriculture and food systems for nutrition;
3. Expansion and improvement of agricultural markets and trade;
4. Climate change adaptation and mitigation in FNSSA; and
5. Cross cutting theme of deployment of digital solutions for research and innovation.

¹⁰ EU Common Agricultural Policy

¹¹ Comprehensive Africa Agriculture Development Programme

A fourth theme is proposed to focus on Climate Change Adaptation and Mitigation in FNSSA. The additional theme demonstrates the integrated nature of FNSSA within the ecosystem. The details of each thematic area and the subthemes are outlined in section 4.4.1 – 4.4.4 below. What had been classified as cross cutting themes could be clustered as enablers for R&I under the EU-AU partnership.

3.3.3.1 Research & innovation theme 1: Sustainable intensification¹²

Africa and Europe share the challenge of producing more food for growing populations while reducing the environmental impact of food production system and their demands on ecosystem services. While the two regions’ food production systems and value chains differ substantially in many aspects, for instance in their influence on global food supply, in the access of farmers to knowledge, services, and technologies, in their productivity, in the availability of uncultivated land, and while the demographic trends that are demanding increased production are concentrated in the global South, both regions are aiming for enhanced sustainability of their production systems. At the same time, both regions are facing significant structural and organisational transformations in agricultural and rural settings entailing far-reaching social change, although the trajectories of these changes differ in the two regions. Possible areas are suggested for joint research and innovation to improve food production, and to reduce environmental impact and resource depletion.

As a broad theme, *Sustainable Intensification* stands out in the EU Green Deal, Farm to Fork and the Strategic Approach to EU agricultural research & innovation. The sub themes have been refined to capture additional areas.

Table 5: Sustainable Intensification Proposed Research Themes

Roadmap Theme	Proposed Review Themes
□ Ecological intensification approaches which optimise the use of ecosystem services to produce food at low realistic costs and lowest environmental impact.	1. Ecological intensification through agro-ecology and/or organic farming approaches ¹³ which conserve bio-diversity ¹⁴ and optimise the use of ecosystem services to produce food at low realistic costs and lowest environmental impact from farm to landscape level ¹⁵
□ The identification and breeding of animals and crops to maintain/increase productivity and resilience under conditions of limited external inputs and increased abiotic and biotic stresses.	2. The identification and breeding of animals and crops to maintain/increase productivity and resilience under conditions of limited external inputs and increased abiotic and biotic stresses.
□ Animal (incl. fish) and crop health, from farm to international scales, to develop sustainable approaches to optimising resource efficiency, minimising production losses and avoiding geographical spreading of diseases/pathogens.	3. Animal (incl. fish) and crop health, from farm to international scales through strengthening integrated pest and disease/pathogen management, reducing antimicrobial resistance, promoting food safety standards ¹⁶ and development

¹² Definition of “Sustainable Intensification”: to produce more outputs (not limited to agricultural products) with a more efficient use of all inputs (not only improved seeds and fertilizers but also knowledge and know-how) on a durable basis, while building resilience and the social and natural capitals, reducing environmental damage and improving the flow of environmental services.

¹³ EU Farm to Fork Strategy

¹⁴ EU Farm to Fork Strategy

¹⁵ A Strategic Approach to EU agricultural Research & Innovation

¹⁶ EU Farm to Fork Strategy

Roadmap Theme	Proposed Review Themes
	of sustainable approaches to optimise resource efficiency and minimise production losses
<p>□ Appropriate soil, water, land and input management, including improved mechanization, integrated pest management, precision agriculture and good irrigation practices, with the aim of delivering food and non-food products at low costs and lowest environmental impact.</p>	<p>4. Appropriate resource (soil, water, land and input) management, including improved mechanization, integrated pest management, precision agriculture and good irrigation practices with the aim of increasing value to land to increase primary production¹⁷ and delivering food and non-food products at low costs and lowest environmental impact.</p>
<p>□ Advanced informed marine spatial planning and functioning of marine ecosystems, and aquaculture technologies and systems that are environmental and economically sustainable, towards increased production with minimal impact on ecosystem functioning and reduced environmental footprint.</p>	<p>5. Advanced informed marine spatial planning and functioning of marine ecosystems, and aquaculture technologies and systems that are environmental and economically sustainable, towards increased production with minimal impact on ecosystem functioning and reduced environmental footprint.</p>
	<p>6. Organizational innovations, through new business models, farmer market information systems, insurance, and land use and availability, facilitating uptake of innovations across farms and rural communities.</p> <p>7. Sustainable landscape management and land governance</p> <ul style="list-style-type: none"> ● Environmental Observation ● Biodiversity and Natural Capital ● Agriculture, forestry and rural areas ● Seas, Oceans and Inland Waters ● Food Systems ● Bio-based Innovation Systems ● Circular economy/systems

3.3.3.2 Research & innovation theme 2: Agriculture and food systems for nutrition.

While agriculture is the basis for food production and therefore contributes substantially to nutrition, scope exists for research directed at improving agriculture and food systems specifically for improved diets and nutritional outcomes. Dietary inadequacy takes very different forms but all are linked to limitations in the production, availability, access, affordability and consumption of highly nutritious foods and to social behaviour.

This theme resonates with the agri-food system themes outlined in the policy documents. Limited adjustments have been made to capture the provisions of the EU Agriculture and Innovation Strategy.

Table 6: Agriculture and food systems for nutrition proposed research themes

¹⁷ A Strategic Approach to EU agricultural Research & Innovation

Roadmap Theme	Proposed Review Themes
<input type="checkbox"/> Improved food value chains (conventional and organic) for delivering and accessing more nutritionally rich food to all (urban, local markets, vulnerable groups) with minimal loss of nutritional value, reduced wastage (along the whole food chain) and a high level of safety.	Improved food value chains (conventional and organic) for delivering and accessing more nutritionally rich food to all (urban, local markets, vulnerable groups) with minimal loss of nutritional value, reduced wastage (along the whole food chain) and a high level of safety.
<input type="checkbox"/> Improved nutritional value of crops and animal products through advances in breeding and biotechnological innovation, such as bio-fortification as well as new or adapted innovative protein sources for cost-effective and resource-efficient alternatives (proteins of the future).	Improved nutritional value of crops and animal products through advances in breeding and biotechnological innovation, such as bio-fortification as well as new or adapted innovative protein sources for cost-effective and resource-efficient alternatives (proteins of the future).
<input type="checkbox"/> Understanding consumer behaviour with respect to healthy diets and nutrition, and the role of education and incentive systems, for improved nutrition.	Understanding consumer behaviour with respect to healthy diets and nutrition, and the role of education, demography, socio-economic status, geography ¹⁸ , and incentive systems, for changes in nutrition and food systems Reducing cases of foodborne illnesses due to exposure to contaminated food, cases of foodborne deaths, and cases of liver cancer caused by dietary exposure to aflatoxins
<input type="checkbox"/> Public-private partnerships on improved nutritional quality of foods, particularly horticultural products and processed foods, in the marketplace.	Public-private partnerships for improved nutritional quality of foods, particularly horticultural products and processed foods, in the marketplace.
<input type="checkbox"/> Developing a common methodology for the physiological basis of nutrition, its relation to diets, the microbiome, age and general health and the influence of genotype and personal history on individual nutritional profiles.	Developing a common methodology for the physiological basis of nutrition, its relation to diets, the microbiome, age and general health and the influence of genotype and personal history on individual nutritional profiles.

3.3.3.3 Research & innovation theme 3: Expansion and improvement of agricultural markets and trade.

The 10th EU-AU Commission-to-Commission Meeting of February 2020 outlined sustainable growth, trade, investment and digitalization as a partnership focus area. During this summit, the two Commissions stressed the importance of the African Continental Free Trade Area (AfCFTA) and agreed on the need to prioritise regional infrastructure. Further agreed was the need to maximise synergies between European and African private sectors and to promote the diversification of African economies. Improvement in domestic resource mobilisation and complement Africa's efforts to stop illicit financial flows. Youth skills development and better match skills with the labour market. The Commissions reaffirmed the contribution of rural transformation to sustainable growth and job creation and both continents agreed to enhance their partnership on digital infrastructure and the single digital market.

From this Summit and the policy documents, agricultural markets and trade remain a key priority to be considered in the revised Roadmap. Limited adjustments have been made to capture the provisions of the AfCFTA.

¹⁸ A Strategic Approach to EU agricultural Research & Innovation

Table 7: Expansion and Improvement of Agricultural Markets and Trade Research Themes

Roadmap Theme	Proposed Review Themes
<p>□ Non-tariff trade barriers: Understanding differences of perception about quality and safety attributes for informing evidence-based decisions on non-tariff barriers to trade.</p>	<p>Non-tariff trade barriers: Understanding differences of perception about quality and safety attributes for informing evidence-based decisions on non-tariff barriers to trade and labour mobility.</p>
<p>□ Surveillance, monitoring and diagnostic systems: Lack of harmonisation of import and export requirements constitutes an impediment to regional and international trade. Collaborative development and broad application of methodologies for food safety issues, standardisation and traceability would permit improved trade in food products.</p>	<p>Surveillance, monitoring and diagnostic systems: Lack of harmonisation of import and export requirements constitutes an impediment to regional and international trade. Collaborative development and broad application of methodologies for food safety issues, standardisation and traceability would permit improved trade in food products.</p>
<p>□ Innovation in the bio-economy: Both regions / countries within the regions are developing bio-economy strategies but with differences in their reliance on scientific inputs.</p>	<p>Innovation in the bio-economy: Both regions / countries within the regions are developing bio-economy strategies but with differences in their reliance on scientific inputs.</p>
<p>□ Food and input price stability and system resilience: The two regions have common interest in reducing price volatilities in national and international markets. Research on agricultural and food markets, institutional arrangements, infrastructure and information systems aimed at reducing price volatility and building resilience will benefit consumers and agribusiness.</p>	<p>Food and input price stability and system resilience: The two regions have common interest in reducing price volatilities in national and international markets. Research on agricultural and food markets, institutional arrangements, and infrastructure and information systems aimed at reducing price volatility and building resilience will benefit consumers and agribusiness.</p>
<p>□ Global value chains and markets: Possible topics for joint research & innovation activity could include, among many others, mechanisms for linking smallholder farmers & rural communities to markets; access to credit and investments; adding value to respond to market opportunities including horticultural, organic, fair-trade and other quality label production and through the processing chain; the impact of urbanisation on trade and rural-urban linkages; and new approaches to food safety.</p>	<p>Geopolitics, global value chains and markets including market uncertainty and vulnerability: Possible topics for joint research & innovation activity could include, among many others, mechanisms for linking smallholder farmers & rural communities to markets; access to credit and investments; adding value to respond to market opportunities including horticultural, organic, inclusive (women and youth)¹⁹ fair-trade and other quality label production and through the processing chain; the impact of urbanisation on trade and rural-urban linkages; new approaches to food safety standards and Sanitary and Phytosanitary measures²⁰; Development of the African food industry and food markets²¹. Reduction in rejected export shipments of food commodities due to food safety violations.</p>

3.3.3.4 Research and Innovation theme 4: Climate Change Adaptation and Mitigation in FNSSA

The recent report on Climate change and Land of the Intergovernmental Panel on Climate Change stresses that it will be impossible to keep global temperatures at safe levels unless there is a transformation in the way the world produces food and manages land. The report estimates that 25 – 30% of global greenhouse gas emissions are attributable to the food system. Agriculture and Food systems greatly contribute to pollution of air at industrial processing, transportation and other fossil fuel-based machinery and equipment. Animal production, breakdown of organic matter from soil, marshlands opening for activities such as paddy rice production, deforestation and clearing of land for

¹⁹ African Continental Free Trade Area Agreement

²⁰ African Continental Free Trade Area Agreement and Towards a Comprehensive Strategy for Africa

²¹ An Africa-Europe Agenda for Rural Transformation. Report of the Task Force Rural Africa

agriculture contribute to greenhouse gas emissions, as well as to biodiversity loss. At the same time, extreme weather events due to climate change are severely affecting agricultural and seafood production with dire consequences for the livelihood of farmers, fishers and coastal and rural communities²². These consequences not only affect the individuals but wider economies which are heavily dependent on agriculture and fisheries, tourism among other sectors dependent on land and water-based resources. For sustainable utilization of land and water resources in Africa and Europe, research and innovation in climate change in agriculture (climate smart agriculture) is proposed.

From the EU perspective which extensively looked at climate related issues in the Green Deal the Farm to Fork Strategy in reference to international cooperation including Africa, articulates that ²³

The EU will focus its **international cooperation** on food research and innovation, with particular reference to climate change adaptation and mitigation; agro-ecology; sustainable landscape management and land governance; conservation and sustainable use of biodiversity; inclusive and fair value chains; nutrition and healthy diets; prevention of and response to food crises, particularly in fragile contexts; resilience and risk preparedness; integrated pest management; plant and animal health and welfare, and food safety standards, antimicrobial resistance as well as sustainability of its coordinated humanitarian and development interventions. The EU will build on ongoing initiatives, and integrate policy coherence for sustainable development in all its policies. These actions will reduce the pressure on biodiversity worldwide.

The research will focus on two critical aspects of climate change management; mitigation and adaptation. Mitigation research and innovation will involve but not be limited to reducing greenhouse emission and increasing carbon sinks across the agricultural value chains. Such activities will include among others reduction of emissions from agricultural systems through carbon sequestration in agricultural production, low emission machinery such as solar powered irrigation, food processing equipment and machinery etc. Climate change adaptation will include research that strengthens agricultural systems especially at farm level to cope with and continue production amidst the impacts of climate change such as increases in temperatures, changes in precipitation patterns, changes in extreme weather events, and reductions in water availability which all negatively affect the production, processing, distribution and affordability of adequate nutritious food.

Table 8: Climate Change Adaptation and Mitigation in FNSSA Research Themes

Proposed Review Themes
1. Reduction of greenhouse gas emissions from agricultural production systems including crops, livestock and fisheries
2. Alternative approaches to restoration of carbon sinks such as forests, marshlands and swamps destroyed by agricultural land expansions and have led to biodiversity loss and increased greenhouse gas emissions
3. Low or zero emission technologies and innovations across the agricultural value chains
4. Social-ecological systems resilience and risk preparedness and mitigation capacity in agricultural systems and livelihoods for agriculture dependent communities

²² Farm to Fork Strategy

²³ Farm to Fork Strategy 2018- Pg. 18

3.3.3.5 Cross cutting themes:

1- Digital Solutions

Information and Communication Technologies play a critical role in transforming the agricultural sector. The application of ICT in agriculture has emerged an important pillar of agriculture extension focusing on the enhancement of agricultural and rural development through improved information and communication processes in an easy to access and cost-effective ways at the right time. The Report of the Africa-European Union Digital Economy Task Force (DETF) 2019 identifies agriculture as one of the sectors where ICTs will play a critical role in its transformation. Specifically, the Task Force highlights that smallholder agriculture can benefit from market information and early warning systems and access to agricultural advisory services. All thematic areas identified, will benefit from or can be greatly influenced by ICT for effectiveness.

2- Gender

Gender and associated constraints stand out as a key challenge for FNSSA especially in Africa where 51% of the population is female contribute significantly to agricultural crop production.²⁴

The Report on the Taskforce notes that it is imperative that consideration be given to females in all initiatives and measures, whether in the formulation of international and national policies and strategies, or in concrete actions at local level. Horizon Europe highlights similar issues. Gender issues extend to access to land, scholarships, trade opportunities, incubation hubs, “agripreneurs” and job creation. These features have been captured in the revised Roadmap. Thus, making gender a cross cutting aspect in the thematic areas of the revised Roadmap.

3.3.4 EU-AU R&I Research Partnership Enablers

There is need to make a distinction between cross cutting issues that constitute an enabling environment for the performance of the EU-Africa R&I Partnership on FNSSA. The issues outlined in this section are valid as components that provide a smooth operational framework for the partnership. These issues have been refined to reflect the policy document provisions, specifically, the strategic approach to EU Agricultural Research & Innovation. Areas of focus outlined in the policy documents as enablers include:

1. Strengthening collaborative capacities of R&I communities:

- a. Enabling science and science infrastructure;
- b. African Union skills initiative- private sector involvement in Technical and Vocational Education and Training;
- c. Supporting labour market and Technical and Vocational Education and Training system diagnostics;
- d. Inter and intra continental mobility of students, staff and academics;
- e. Recognition of qualifications across AU&EU; and,

²⁴ <https://openknowledge.worldbank.org/handle/10986/28543>

f. Access of higher education and research institutions to e-infrastructure.²⁵

2. Social and cultural contexts of FNSSA production systems:

- a) Societal engagement;
- b) Inclusive and Secure Society;²⁶
- c) Sustainability of its coordinated humanitarian and development interventions;
- d) New openings for rural growth; and
- e) Enhancing the human and social capital in rural areas.

3.3.5 Monitoring and Evaluation of the R&I Partnership on FNSSA

All policy documents have monitoring and evaluation frameworks, which could be considered for integration in the Monitoring and Evaluation of the R&I Partnership on FNSSA. Additional protocols to be included under M&E include:

1. The methodology for M&E is given in the Roadmap, the policy documents reviewed, however, show targets, a good practice to adopt in the Roadmap. For example, the Green Deal articulates targets to reduce Green House emissions, improve consumption, risk from pesticide use, soil nutrient, and antimicrobial use. These could be categorized as short, medium- and long-term targets corresponding to the short, medium term and long-term actions of the programmes deployed to operationalize the Roadmap
2. Create reporting frameworks with guidelines and procedures for the different partners in Africa and Europe implementing the Roadmap
3. Annual monitoring of the programme performance and tracking of performance indicators which could be linked to the continental M&E frameworks such as the African Agricultural Transformation Scorecard (AATS)
4. Open source, continuous performance monitoring/data collection
5. Centralise data collection and management processes – repository and knowledge hub; and,
6. Monitoring at country level using existing M&E processes at that level

The joint EU-AU Agriculture Ministerial Conference may be an opportunity to raise performance reporting, monitoring and evaluation and country level focus and experience sharing.

4 Institutional Actors and Implementation Protocols

The study explored the types of institutional actors to be involved in FNSSA in general and implementation of the Roadmap in particular as extracted from the policy documents. These actors fall in different categories including those that are directly linked to FNSSA as a thematic area (table 9), and at the Roadmap implementation of the level. The identified actors and perceived interactions take care of the issues of funding (International Research Organisations and Government Ministries) capacity to undertake research, knowledge management and replication, and the connectedness of the FNSSA ecosystem. The role of universities, higher education institutions and other research

²⁵Communication on a New Africa-Europe Alliance for Sustainable Investment and Jobs

²⁶ A Strategic Approach to EU agricultural Research & Innovation

organisation cannot be over emphasised for successful execution of FNSSA R&I under the EU-AU partnership. Key to the success of the R&I Partnership is the harmonised coordination mechanism for the various actors that involves strengthening the coordination capacity of African institutions.

Table 9: FNSSA Actors and their roles

No.	Actor category	Roles/responsibilities in FNSSA R&I
1.	Consumers of agricultural products	<ul style="list-style-type: none"> • Purchase products • Create demand • Influence policy
2.	Government policy and regulatory framework (Government Ministries and Agencies)	<ul style="list-style-type: none"> • Evidence based policy making • Regulation, creation of standards • Policy dialogue • Set codes and standards within organisations
3.	Agricultural and related sciences Research Organisations (International such as CGIAR, public such as NARIs and private research companies, think tanks)	<ul style="list-style-type: none"> • Innovate and share innovations • Assess demand • Conduct and communicate research, advise producers; • Educate producers, private sector actors, and agricultural advisory services • Provide knowledge and evidence for policy making • Capacity building (Short trainings, Undergraduate
4.	Agricultural Advisory Services (Public national and regional, NGOs, producer organisations and private companies)	<ul style="list-style-type: none"> • Assess demand • Link producers with other actors in the agricultural innovation system • Share information • Develop capacity, advise and empower producers • Broker and share innovations
5.	Agricultural Education System (Universities, Vocational training, on-job training, all levels of schools, informal education institutions)	<ul style="list-style-type: none"> • Develop capacity (short courses, technical and vocational training, undergraduate, masters, PhD and post-doctoral training) • Advisory services • Research and innovation • Sharing innovations
6.	Producer organisations (Family farmers, Small-scale farmers, Large-scale commercial farmers, Fisherfolk, Pastoralists and Landless producers of honey, butterfly larvae)	<ul style="list-style-type: none"> • Innovate and share innovations • Provide demands to agricultural advisory services, agricultural research system, and agricultural education system • Produce and supply agricultural products
7.	Private sector actors (Agro processors, input dealers, distributors, traders, exporters and large corporations)	<ul style="list-style-type: none"> • Supply of goods and services along the agricultural value chain • Innovate and share innovations • Assess demand, provide inputs, distribute inputs, • Purchase, process, trade, and export produce • Educate and advise producers
8.	Financial service suppliers (Banks, Microfinance institutions, Microcredit, credit agencies, Insurance companies, telecommunication service providers)	<ul style="list-style-type: none"> • Provide loans and credit • Advise producers • Provide insurance for producers
9.	Global and continental development partners (Food and Agriculture Organization of the United Nations, New Partnership for Africa's Development, Regional Organisations and Research Networks, World Bank, International Fund for Agricultural Development, European Development Banks, African Union, and European Union etc.)	<ul style="list-style-type: none"> • Technical knowledge on best practice along the agriculture value chains and policy making • Provide data for agricultural practice, research and innovation, and policy making in agriculture • Provide funding for production, research and innovation and sharing of best practice agriculture

5 Funding Mechanisms

The policy documents are cognizant that in a world of heightened technological competition, not investing in R&I on an EU scale would result in a decline of the EU's global competitiveness with foreseeable economic social and environmental impacts ²⁷. This principle is applicable to Africa

²⁷ Establishing Horizon Europe – the Framework Programme for Research and Innovation (2018)

continent as articulated by the AU framework documents including Agenda 2063, STISA and CAADP. Noting that Research & Innovation (R&I) is a crucial part of the knowledge-based society that require support from a multiplicity of stakeholders and funding agencies. R&I projects should leverage support from national governments and international agencies.

The Financial dimension in the policy documents recognizes that, R&I projects chosen for EU funding harness a higher level of EU or international cooperation and have a scale, scope and level of sophistication that cannot be met by national funding alone (83 % of EU R&I projects would not have gone ahead without the EU-support)²⁸. Based on this premise, the EU has already identified the possible financing instruments from which the EU –AU activities should be financed. Partnerships under Horizon Europe are potential sources of financing for the R&I FNSSA Roadmap partnership (see section 5.1.1). Other potential funding sources identified in Horizon Europe are European Fund for Sustainable Development and External Action Guarantee under the Neighbourhood, Development and International Cooperation Instrument (NDICI) and Instrument for Pre-accession Assistance (IPA III).

Other policy documents notably *Communication on a new Africa – Europe Alliance for Sustainable Investment and Jobs: Taking our partnership for investment and jobs to the next level* are looking towards mobilisation of private investors and domestic resources.

5.1 Horizon EUROPE

Horizon Europe (European Union Framework Programme for Research and Innovation 2021 – 2027) was designed as a successor to Horizon 2020 and it intends to strengthen the Union’s scientific and technological bases in order to help tackle the major global challenges of our time and contribute to achieving the Sustainable Development Goals (SDGs).

Horizon Europe will significantly strengthen international cooperation which is crucial to ensure access to talent, knowledge, know-how, facilities and markets worldwide, to effectively tackle global challenges and to implement global commitments. The Framework Programme will intensify cooperation and extend association agreements to include countries with excellent science, technology and innovation capacities. The Programme will continue to fund entities from low-to-mid income countries, and to fund entities from industrialised and emerging economies only if they possess essential competence or facilities²⁹. Therefore, it is likely to be the source of financing for an EU/AU FNSSA R&I partnership Roadmap.

5.1.1 Proposed EU partnerships under Horizon Europe

Horizon Europe plays a pivotal role in shaping, supporting and delivering on European policy priorities, in collaboration with Member States and future associated countries through the European Research Area. One of the funding mechanisms of Horizon Europe are European partnerships. European Partnerships are initiatives where the EU together with private and/or public partners commit to jointly support the development and implementation of a programme of research and innovation activities.

²⁸ Establishing Horizon Europe – the Framework Programme for Research and Innovation (2018)

²⁹ Establishing Horizon Europe – the Framework Programme for Research and Innovation, laying down its rules for participation and dissemination

The partners could represent industry, universities, research organisations, bodies with a public service remit at local, regional, national or international level or civil society organisations including foundations and NGOs.

The study investigates the propositions for international dimensions of the Horizon Europe Partnerships that are being developed for Research and Innovation in themes including Food Systems, Agro-ecology, Animal Health, and Data for Agriculture.

The added value of the R&I partnerships lies in bringing together a broad range of actors to work towards a common vision and translating it into concrete roadmaps and coordinated implementation of activities. Partnerships allow to cover a broad set of activities from funding research and innovation projects to those related to societal, regulatory and market uptake, and developing synergies with national and regional programmes to ensure deployment and scaling up of new clean technologies and solutions. As such, they are powerful approaches for providing solutions to global challenges and drive transformation towards achieving the SDGs.

European Partnerships may take any of the following forms:

a) Co-programmed European Partnerships

These are partnerships between the Commission and private and/or public partners. They are based on memoranda of understanding and/or contractual arrangements.

b) Co-funded European Partnerships using a programme co-fund action

Partnerships involving EU countries, with research funders and other public authorities at the core of the consortium.

c) Institutionalized European Partnerships

These are partnerships where the EU participates in research and innovation funding programmes that are undertaken by EU countries. These partnerships require legislative proposals from the Commission and are based on a Council Regulation ([Article 187](#)) or a Decision by the European Parliament and Council ([Article 185](#)). They are implemented by dedicated structures created for that purpose. Institutionalised partnerships will only be implemented where other parts of the Horizon Europe programme, including other types of partnership, would not achieve the desired objectives or expected impacts.

In the 'Orientations towards the first Strategic Plan for Horizon Europe'³⁰, 49 candidates for European Partnerships are presented. Out of the 49 proposed partnerships, 10 in two clusters (Health and Food, Bio economy, Natural Resources, Agriculture and Environment) are in the field of FNSSA Roadmap (see Table 10).

³⁰https://ec.europa.eu/info/sites/info/files/research_and_innovation/strategy_on_research_and_innovation/documents/ec_rtd_orientations-he-strategic-plan_122019.pdf

Table 10: Brief overview potentially relevant candidate European Partnerships for EU-AU Research & Innovation collaboration









































Preliminary list of candidates for European Partnerships in Pillar II, III and cross pillar, and short description of what the partnership stands and aims for	Form of implementation	Predecessors	Composition of partners	Relevance for clusters
CLUSTER 1: HEALTH				
3. European partnership for chemicals risk assessment (PARC). Bring together the European risk assessment and regulatory agencies to implement a joint research agenda, to ensure their capacity to deal with persistent or emerging challenges. It will promote the uptake of new methods, tools, technologies and information in chemical hazard identification and risk assessment, sustain the development and use of human biomonitoring capacities in Europe.	Co-funded	HBM4EU (Human Biomonitoring) and a number of other actions	MS/AC, National agencies, role of the corresponding EU agencies	Cl.1, 4, 6
8. One Health AMR. The partnership aims to bring together the many aspects of antimicrobial resistance (AMR) to overcome the fragmentation of the AMR research landscape, and integrate the various different research fields (addressing human and animal health, food safety and environment). It will contribute to the EU One health action plan against AMR.	Co-funded	ERA-NET EXEDRA, JPI AMR, One Health EJP	MS/AC	Cl.1, 4, 6
CLUSTER 6: FOOD, BIOECONOMY, NATURAL RESOURCES, AGRICULTURE AND ENVIRONMENT				
31. Accelerating farming systems transition: agro-ecology living labs & research infrastructures. Grasping short to long-term agro ecological processes at landscape level, accelerating the transition towards sustainable climate and environment-friendly farming practices by boosting place-based innovation in a co-creative environment, fostering adoption of innovation by farmers and other actors.	Co-funded	n.a.	MS/AC (RFOs/regional authorities)	Cl.1, 5, 6
32. Animal health: Fighting infectious diseases (PAH). The partnership aims to bring sustainable and innovative solutions to tackle infectious animal diseases, including those transmitted between animals and humans (zoonosis) and to contribute to the fight against anti-microbial resistance, implementing the One Health concept. It will support sustainable animal production, reduce trade barriers, and protect consumers.	Co-programmed, Co-funded	A small number of current ERA-NETs	Either MS/AC or Industry, and regulatory agencies	Cl.1, 6
33. Environmental Observations for a sustainable EU agriculture. The objective of the initiative is to support the delivery of a sustainable CAP by improving agricultural practices and farm profitability and using the possibilities the current digital/data techniques in the field. New services and applications will be developed for EU's farming sector enabling more efficient, environmentally friendly and profitable production systems.	Co-funded	EuroGEOSS	MS/AC (RFOs, nat./reg. authorities)	Cl. 4, 6
34. Rescuing biodiversity to safeguard life on Earth. Halting biodiversity loss, maintaining and restoring natural capital is essential for the transition towards sustainability, climate neutrality and for respecting the planetary boundaries. The partnership aims to deploy solutions to stop the ongoing mass extinction of species caused by human activity by up scaling, aligning and integrating European research and innovation efforts and investment, guiding actions to protect, restore and sustainably manage ecosystems and natural capital.	Co-funded	ERA-NET Biodiversity, EKLIPSE, ESMERALDA	MS/AC (RFOs, national/regional authorities)	Cl.1, 2, 5, 6
35. A climate neutral, sustainable and productive Blue Economy. The objective is to sustainably unlock, demonstrate and harvest the full potential of Europe's Oceans and Seas through a well-structured, sustained and simplified joint effort in this borderless domain with the aim to support the transition to a strong, climate neutral and sustainable blue economy by 2050.	Co-programmed or Co-funded	BONUS, MARTERA, JPI Oceans, BlueBio	MS/AC (RFOs, nat./reg. authorities), EU Agencies	Cl.1, 2, 4, 5, 6

Preliminary list of candidates for European Partnerships in Pillar II, III and cross pillar, and short description of what the partnership stands and aims for	Form of implementation	Predecessors	Composition of partners	Relevance for clusters
36. Safe and Sustainable Food System for People, Planet & Climate. Fixing our food system is central to the transition to a ‘Sustainable Europe by 2030’, and key to meeting the IPCC climate targets and operating within key planetary boundaries. Deploy FOOD 2030 and deliver the Food Safety System of the future, ensuring consumer trust, safety, quality and traceability.	Co-programmed or Co-funded	FACCE Surplus, ICT Agri2, CoreOrganic, ERA GAS, SUSAN, ERA HDL, SusFood2	MS/AC (research funders, nat./reg. authorities), EU Agencies	Cl. 6
37. Circular bio-based Europe: Sustainable, inclusive and circular bio-based solutions. Sustainable and climate-neutral solutions accelerating the transition to a healthy planet, where renewable products and nutrients will be produced from biomass and waste instead of non-renewable fossil and mineral resources. This creates awareness, capacities and appropriate structures extending beyond industry partners, mobilising producers of biological resources and end-users.	Art.187 or Co-programmed	BBI JU	Industry	Cl. 4, 5, 6
38. Water4All: Water security for the planet. Secure all water demands in terms of quality and quantity, protect both economic and natural systems, as well as people from water-related hazards. Support the transition to a healthy planet and to ensure a resilient Energy Union, EU climate neutral policy and respect of planetary boundaries.	Co-programmed or Co-funded	Water JPI	MS/AC (RFOs, nat./reg. authorities)	Cl.1, 2, 4, 5, 6

5.1.2 Alignment of Proposed Horizon Europe Partnerships to EU-AU FNSSA Roadmap

The analysis of the draft proposal documents³¹ of these 10 candidate partnerships showed that the objectives are aligned with the EU-Africa Research & Innovation Roadmap thematic areas as shown in the table 11.

Table 11: Scores per partnership and per thematic area addressed by FNSSA roadmap

Proposed EU partnership	Sustainable intensification	Agric & food systems for nutrition	Expansion and improvement of agric markets & trade	Improved coordination between EU & AU R&I projects	Supporting innovation	Strengthening collaborative capacities
PARC- Chemical risks						
AMR- Antimicrobial resistance						
Agro- ecology living labs						
PAH- Animal Health						
Agric Data						
Biodiversity						
Blue Economy						
Safe Food Systems						
CBE- Circular bio-based						
Water4All						

³¹ Accessed through https://ec.europa.eu/info/horizon-europe-next-research-and-innovation-framework-programme/european-partnerships-horizon-europe_en

5.1.3 Alignment of Proposed Horizon Europe Partnerships to Broad Frameworks

A quick verification with African continental policies such as the Agenda 2063 and CAADP / Malabo declaration also shows that these proposed EU partnerships could contribute to achieving continental goals.

Table 12: Possible links between African priority themes and proposed EU partnerships

<i>African policy documents – priority themes</i>	<i>Possible links with proposed EU partnerships</i>
Agenda 2063	
Aspiration 1: prosperous Africa based on inclusive growth and sustainable development	<ul style="list-style-type: none"> • Modern agriculture for increased production, productivity and value addition • healthy and preserved environment and ecosystems • Climate resilient economies and communities. • New job opportunities, profitable and attractive to youths and women (e.g. data, circular bio-based economy, control animal diseases, production vaccines, food safety, etc). • Blue economy as a major contributor to continental transformation and growth, advancing knowledge on marine and aquatic biotechnology. • Addressing climate change through adaptation and mitigation, support and broaden the policy space for sustainable development on African continent. • Equitable and sustainable use and management of water resources for socio-economic development, regional cooperation and the environment.
CAADP/Malabo Declaration commitments	
Increased production and productivity	Increased production & productivity through less animal diseases.
Increased intra African regional trade and better functioning of national and regional markets	Increased intra African trade requires control of animal diseases, food quality and safety standards.
Expanded local agro industry and value chain development inclusive of women and youth	Generate new business opportunities, e.g.: <ul style="list-style-type: none"> • local agro-industry in case private sector participates in PAH, and obtain license to produce vaccines; • further strengthen animal health sector in rural areas and markets. • development of the blue economy • development of the circular bio-based economy • food quality and safety systems • use of data in agriculture While ensuring: <ul style="list-style-type: none"> • sustainable water use in local agro industry • sound environmental management
Increased resilience of livelihoods and improved management of risks in the agricultural sector	Management risks of outbreaks of animal diseases, manage droughts and floods
Improved management of natural resources for sustainable agriculture	Agro-ecology living labs and research infrastructure, biodiversity, water management, toxic free environment
Malabo Declaration commitments	
Commitment to Ending Hunger in Africa by 2025	Focus on increased & sustainable productivity, reduction animal diseases, food safety, reduction of food losses, improved nutritional status.
Commitment to Halving Poverty by the year 2025, through Inclusive Agricultural Growth and Transformation	New business opportunities could contribute to reduction poverty youth and women: Generate new business opportunities <ul style="list-style-type: none"> • local agro-industry in case private sector participates in PAH, and obtain license to produce vaccines;

<i>African policy documents – priority themes</i>	<i>Possible links with proposed EU partnerships</i>
	<ul style="list-style-type: none"> • Further strengthen animal health sector in rural areas and markets. • development of the blue economy • development of the circular bio-based economy • develop novel food & feed ingredients • food quality and safety systems • use of data in agriculture <p>While ensuring:</p> <ul style="list-style-type: none"> • sustainable water use in local agro industry • sound environmental management
Commitment to Boosting Intra-African Trade in Agricultural commodities and services	Boosting intra African trade requires control of animal diseases, food quality and safety standards.
Commitment to Enhancing Resilience of Livelihoods and Production Systems to Climate Variability and other related risks	Managing outbreaks of animal diseases, droughts and floods, agro ecology living labs and research infrastructure, restore biodiversity, water management, toxic free environment (free from chemicals), circular biobased economy substitute now-renewable fossil and mineral resources, forecasting climate change and mitigate its impact, data technologies for more efficient, environmentally friendly and profitable agriculture production and strengthen monitoring capacities across policy fields.

Subsequently, the study identified additional issues raised in these partnerships that were not yet covered under the current (2016 version) of the FNSSA Roadmap, whether the proposed partnerships had already indicated their interest in opening up for partners outside the EU and what the implications for required action are. The table below summarizes how the ten proposed partnerships could contribute to a jointly funded EU-Africa Research & Innovation Partnership, and to what extent they could enrich the current FNSSA Roadmap.

Table 13: Proposed EU partnerships and the FNSSA Roadmap: additional topics and potential for EU-AU collaboration

Candidates for European Partnerships	Interest collaboration Africa	Additional propositions/issues raised in the context of current affairs in AU and EU	Implications and required action
3. European partnership for chemicals risk assessment (PARC).	Interest international collaboration	Chemical safety challenge throughout (international) value chains. To address chemical safety challenges is in line with Agenda 2063 (Aspiration 1), thematic areas addressed by CAADP (1, 2, 3, 4, 5) and the Malabo commitments (3, 5, 6).	<ul style="list-style-type: none"> Objective of this partnership is relevant Partnership focus is on Europe Mentions interest for international collaboration Need to confirm opportunity for EU-AU collaboration <p>Involvement of African partners would mean a) revision of the text to include the African agenda, b) involvement of other stakeholders (national public organisations which conduct risk assessment and/or regulatory activities), and c) commitment for financial contribution, incl modalities for collaboration.</p>
8. One Health AMR.	Interest international collaboration	Antimicrobial Resistance and the One Health approach. To address AMR is in line with Agenda 2063 (Aspiration 1), thematic areas addressed by CAADP (1, 3, 4, 5) and the Malabo commitments (3, 5).	<ul style="list-style-type: none"> Objective of this partnership is relevant Partnership focus is on Europe Mentions interest for international collaboration Need to confirm opportunity for EU-AU collaboration <p>Involvement of African partners would mean a) revision of the text to include the African agenda, and b) commitment for financial contribution, including modalities for collaboration.</p>
31. Accelerating farming systems transition: agro-ecology living labs & research infrastructures.	Interest not known	Establishment of a network of connected agro-ecology living labs. The agro-ecology approach is in line with Agenda 2063 (Aspiration 1), thematic areas addressed by CAADP (1, 4, 5) and the Malabo commitments (3, 6).	<ul style="list-style-type: none"> Need to assess interest for EU-AU collaboration <p>An equal partnership would require substantial investment in living labs and long-term commitment. Alternatively, one would have to identify already existing living labs in Africa and ensure that these are connected to each other, and to the European living labs.</p>
32. Animal health: Fighting infectious diseases (PAH).	AMR and infectious diseases are cross-border issues, hence request to open partnership to other continents	Contents already covered in FNSSA Roadmap, including possible areas for joint research and innovation. AMR and fighting infectious diseases is in line with Agenda 2063 (Aspiration 1), thematic areas addressed by CAADP (1, 2, 3, 4) and the Malabo commitments (3, 4, 5).	<ul style="list-style-type: none"> No implications for the FNSSA Roadmap text. <p>EU-AU collaboration through this partnership would require discussions between interested parties on scope, commitment, etc.</p>
33. Environmental Observations for a sustainable EU agriculture (Agriculture of data).	Interest not known	Generating EU-wide data sets and information to provide solutions to agriculture sector. The use of agricultural data is in line with Agenda 2063 (Aspiration 1), thematic areas addressed by CAADP (1, 4, 5) and the Malabo commitments (3, 6).	<ul style="list-style-type: none"> Africa has been involved in Copernicus programmes However, because sharing of data could be sensitive, this might first require a discussion at AUC level and AU Member States whether a) collaboration is desirable and, if so b) to what extent.
34. Rescuing biodiversity to safeguard life on Earth.	Interest not known	Explicit focus on biodiversity, linking it to practical solutions, science-based policies, and large conventions.	<ul style="list-style-type: none"> Assess interest for EU-AU collaboration. <p>If sustainable agriculture (CAADP, Malabo, and Agenda 2063) and healthy & preserved ecosystems (Agenda 2063) are to be measured</p>

Candidates for European Partnerships	Interest collaboration Africa	Additional propositions/issues raised in the context of current affairs in AU and EU	Implications and required action
		The importance of biodiversity is in line with Agenda 2063 (Aspiration 1), thematic area addressed by CAADP (5) and the Malabo commitment (6)	through biodiversity, then this could be made more explicit in the Roadmap.
35. A climate neutral, sustainable and productive Blue Economy.	African countries bordering Mediterranean Sea or Atlantic Ocean	The concept of blue economy and healthy oceans is much more comprehensive than what is currently included in the FNSSA roadmap. Blue economy and healthy oceans are in line with Agenda 2063 (Aspiration 1), thematic areas addressed by CAADP (1, 3, 5) and the Malabo commitments (3, 4, 6).	<ul style="list-style-type: none"> • Explicit request for strong cooperation between all countries bordering the Atlantic and the European seas. • Since the focus is on alignment to achieve impact at sea or ocean level, this might require a discussion at AUC level and African member states if they would like to join this partnership.
36. Safe and Sustainable Food System for People, Planet & Climate.	Interest international collaboration	Topic is already covered in FNSSA Roadmap. Safe and sustainable food systems is in line with Agenda 2063 (Aspiration 1), thematic areas addressed by CAADP (1, 3, 4) and the Malabo commitments (3, 4, 6).	<ul style="list-style-type: none"> • Objective of this partnership is relevant • Partnership focus is on Europe • Mentions interest for international collaboration • Need to confirm opportunity for EU-AU collaboration <p>Involvement of African partners would mean a) revision of the text to include the African agenda, b) involvement of other stakeholders (Food Safety Agencies and regulatory bodies including risk assessment bodies), and c) commitment for financial contribution, including modalities for collaboration.</p>
37. Circular bio-based Europe: Sustainable, inclusive and circular bio-based solutions.	No interest. Third countries can participate in open calls per Horizon Europe rules for participation.	Circular economy and use of biowaste and biomass. A circular and bio-based economy is in line with Agenda 2063 (Aspiration 1), thematic areas addressed by CAADP (1, 3, 4, 5) and the Malabo commitments (4, 6).	<ul style="list-style-type: none"> • Assess to what extent the drive towards a more circular bio-based economy is relevant to the African context • The members of this partnership have already indicated that Europe will be their focus and they have no interest to open up the partnership.
38. Water4All: Water security for the planet.	Clear wish to collaborate with parties outside Europe. Associated Countries (Tunisia) can be a partner. Other African countries can participate in joint activities and decide if they want to be integrated	Urgency of water quality and security. Water security is in line with Agenda 2063 (Aspiration 1), thematic areas addressed by CAADP (1, 4, 5) and the Malabo commitments (3, 4, 6).	<ul style="list-style-type: none"> • The FNSSA roadmap refers to JPI Water as a successful example of Africa-Europe STI collaboration • This candidate EU partnership welcomes collaboration <p>Discuss opportunities to open up this partnership for EU-AU collaboration. The revised roadmap text could include more detail on water security & quality, and refer to the Water4All partnership as a means R&I for collaboration.</p>

The European partnerships are still being developed. Discussions on who wants to participate and who is willing to provide a clear financial commitment are ongoing. Some hope to start in 2021-2022, others are preparing their start for 2023-2024.

It may be advisable to first approach the three proposed partnerships that have already been indicated in Horizon Europe documents where collaboration with Africa is articulated. These are, 'A climate neutral, sustainable and productive Blue Economy Partnership', and the 'Water4All partnership' envisage to start in 2021-2022, and the 'Animal health: Fighting infectious diseases (PAH)' in 2023-2024.

6 Evidence from Projects Implemented under the FNSSA Roadmap

The second objective of this assignment was to assess the extent to which the EU-AU FNSSA R&I Partnership, supported by projects such as LEAP4FNSSA, can help to relate and advance on the FNSSA Research and innovation priorities. To conduct this assessment, the study examined the projects that have been implemented over the past six years, categorised as short (2016), medium (2017) and long terms 2018-2020 and beyond. Twelve projects funded under the EU-AU partnerships were reviewed see Table 14. An outline of the objectives and core elements indicates that the projects have focused on five main elements: coordination, research, resource mobilisation, knowledge management and dissemination of outputs. These focus areas are in line with the potential areas for projects such as LEAP4FNSSA and can therefore be used to inform future programming and especially in line with the partnership propositions.

Table 14: Projects Implemented under the EU-AU FNSSA R&I Roadmap 2016-2020

No	Project title	Overall objective	Potential Roadmap implementation area	Duration	Time frame
	Research and Innovation Network for Europe and Africa (RINEA)	Provide technical support to the EU-Africa High Level Policy Dialogue on Science, Technology and Innovation in implementing the Africa-EU partnership in Research and Innovation.	<ul style="list-style-type: none"> • Coordination of FNSSA partnerships and networks between Africa and Europe • Research and innovation in FNSSA domain • Dissemination of cooperation opportunities, research outputs and impact • Generate evidence for policy and decision making in Europe and Africa • STI policy dialogue and coordination • Generate agenda for research and innovation in Africa 	1 st March 2015 to 31 st May 2018	Short term (up to 2016)
	Towards a long-term Africa-EU partnership to raise sustainable food and nutrition security in Africa (PROIntensAfrica)	Develop a framework for a long-term research and innovation partnership between Europe and Africa focusing on the improvement of the food and nutrition security and the livelihoods of African farmers exploiting the diversity of pathways to sustainable intensification of African agro-food systems.	<ul style="list-style-type: none"> • Research and innovation agenda through knowledge gap identification • Coordination of Africa-EU partnership • Generation and dissemination of knowledge to intended users 	1 st April 2015 to 31 st March 2017	Short term (up to 2016)
	Advancing SSA-EU cooperation in research and innovation for global challenges (CAST-Net plus)	A reinforced bi-regional STI relationship for jointly tackling global societal challenges and contributing to smart, inclusive and sustainable growth of both regions	<ul style="list-style-type: none"> • Coordination of policies and programmes • Bridging the public-private sector gap • Improving framework conditions by identifying barriers and proposing solutions to overcoming them • Partnership brokerage and coordination including with private sector • Facilitate mutual learning and regional dialogue and networking • Documentation, management and wide dissemination of partnership opportunities 	1 st January 2013 to 31 st December 2017	Short term (up to 2016)
	Platform for African and European Partnerships for Agricultural Research for Development (PAEPARD)	PAEPARD aims to facilitate multi-stakeholder Africa-Europe partnerships in the field of agricultural research for development (ARD) with a view to contributing to the achievement of Sustainable Development Goals (SDGs)	<ul style="list-style-type: none"> • Mobilisation and brokerage of partnerships and resources for FNSSA Research and Innovation • Research and Innovation in the FNSSA domain • Generation, management and dissemination of information and knowledge in FNSSA domain • Capacity building for FNSSA R&I 	17 th December 2009 to 16 th December 2017	Short term (up to 2016)
	Strengthening Technology, Research and Innovation Cooperation between Europe and South Africa	Promote, facilitate and coordinate research, development and innovation (RDI) cooperation between South Africa and the European Union in areas of common interest.	<ul style="list-style-type: none"> • Coordination of partnerships between Europe and South Africa • Research needs identification and agenda setting • Research and innovation in agreed areas • Facilitate bi-lateral policy dialogue 	1 st February 2016 to 30 th April 2019	Short term (up to 2016)

No	Project title	Overall objective	Potential Roadmap implementation area	Duration	Time frame
	2020 (ESASTAP)				
	Developing African-European joint collaboration for Science and Technology (ERAfrica)	Promotion and advancement of European collaborative scientific and technological research	<ul style="list-style-type: none"> Establish coordination and communication structures for the Research and Innovation partnership Promote joint learning among Africa and European R&I actors Resource mobilisation for R&I and development of funding schemes Conducting Research and Innovation Capacity strengthening for R&I especially for Africa Generation, management and dissemination of information and knowledge to end-users including farmers 	1 st December 2010 to 30 th November 2014	Short term (up to 2016)
	African Union Research Grants – Phase II (2016 and 2018 Calls for proposals) ³²	Deploy Science, Technology and Innovation (STI) in the Agricultural sector as tool for Africa’s sustainable economic growth, wealth creation, and food and nutrition security, as well as for political stability	<ul style="list-style-type: none"> Research and Innovation in the FNSSA Roadmap priority areas Build capacity for AUC to coordinate and capacity of researchers in Africa to undertake research; Create thematic networks for knowledge sharing Foster partnerships between Africa and Europe 	2014 to 2020	Medium term (up to 2017)
	A Long-term EU-Africa Research and Innovation Partnership on Food and Nutrition Security and Sustainable Agriculture (LEAPAgri)	Consolidating an EU-Africa Research and Innovation flagship partnership in the Food and Nutrition Security and Sustainable Agriculture “FNSSA” domain by increasing investments in research and innovation through a coordinated bi-regional (Europe/Africa) mechanism aimed at reducing fragmentation.	<ul style="list-style-type: none"> Needs assessment (consultations and studies) and generation of FNSSA R&I agenda Mobilisation of resources for FNSSA R&I and testing of co-funding instrument Research and Innovation in the FNSSA domain Coordination of FNSSA domain partnerships Generation, management and dissemination of information and knowledge to end-users 	1 st December 2016 to 30 th November 2021	Medium term (up to 2017)
	Innovations in Technology, Institutional and Extension Approaches towards Sustainable Agriculture and enhanced Food and Nutritional Security in Africa (InnovAfrica)	Improve FNS by integrating sustainable agriculture intensification (SAI) systems, innovative institutional approaches (IIAs) with novel extension and advisory services (EASs) and enhancing smallholder adaptive capacity in Sub-Saharan Africa (SSA)	<ul style="list-style-type: none"> Research and Innovation in FNSSA Coordination of R&I partnerships between Africa and Europe Generation, management and dissemination of information and knowledge to end-users Generate knowledge for policy and decision making 	1 st June 2017 to 31 st May 2021	Medium term (up to 2017)
	The Global Monitoring for Environment and Security and Africa (GMES & Africa) https://gmes4africa.blogspot.com/p/objectives.html	To promote more sustainable management of natural resources by improving the decision-making process through the provision of additional pertinent information.	<ul style="list-style-type: none"> Resource mobilisation and financing of R&I partnerships in Earth Observation Research and Innovation in Earth Observation in the FNSSA and other domains Coordination of Africa EU partnerships for R&I in Earth Observation 	1 st January 2017 to 31 st December 2020	Medium term (up to 2017)

³²18 grants have been awarded under the two calls. This is inadequate to cover the FNSSA issues across the continent (need to disseminate outputs/knowledge to the wider continent)

No .	Project title	Overall objective	Potential Roadmap implementation area	Duration	Time frame
			<ul style="list-style-type: none"> • Capacity building in Earth Observation for Earth Observation in FNSSA and other domains • Generation, management and dissemination of information and knowledge to end-users • Generate knowledge and information for policy and decision making 		
	Supporting EU-African Cooperation on Research Infrastructures for Food Security and Greenhouse Gas Observations	Promote the EU-Africa cooperation dialogue at different levels (policy, science, society) on the following themes: land use change, climate-smart agriculture, carbon cycle and greenhouse gases observations, in order to support mitigation and adaptation to climate change	<ul style="list-style-type: none"> • Research and Innovation needs assessment in land use change, climate-smart agriculture, carbon cycle and greenhouse gases observations • Needs assessment and research agenda setting in the FNSSA domain • Capacity development in R&I • Generate data for decision and policy making • Africa-EU cooperation dialogue at different levels (policy, science, society) on the thematic areas • Build a network of partners for R&I between Africa and Europe 	1 st March 2017 to 31 st August 2020	Medium term (up to 2017)
	Long-term Europe-Africa Research and Innovation Partnership for Food and Nutrition Security and Sustainable Agriculture (LEAP4FNSSA)	Provide a tool for European and African institutions to engage in a Sustainable Partnership Platform for research and innovation on Food and Nutrition Security, and Sustainable Agriculture (FNSSA).	<ul style="list-style-type: none"> • Provide technical support to the HLPD • Creation of strategic FNSSA Alliances in R&I, • Generation, management and dissemination of information and knowledge to end-users • Generate knowledge and information for policy and decision making 	1 st November 2018 to 31 st October 2022	Long term (2018-2020 and beyond)

6.1 The role of Projects in supporting implementation of FNSSA Roadmap

From the review of projects implemented under the Roadmap, it is evident that beyond the established structures of the EU-AU partnership including the EU-Africa High Level Policy Dialogue on Science Technology and Innovation and its Bureaus and the FNSSA Expert Working group there are other players that are important for the successful implementation of the Roadmap. Further noting that, to date, the implementation of the Roadmap has been through projects. The review indicates that the following roles could be played by the projects to enhance the FNSSA partnership outcomes and specifically the implementation of the Roadmap.

1. Organise and coordinate needs identification and FNSSA Research Agenda Setting
2. Design of action plans, development of projects and programmes to implement the Roadmap
3. Setting ethics, standards and quality assurance of the research processes
4. Mobilisation and coordination of funding agencies to support R&I FNSSA across the value chain (resource mobilisation)
5. Coordination of implementation, monitoring and evaluation
6. Knowledge management (storage and retrieval, translation of knowledge, technologies for replication and use across communities) to include actors in the platform who can help get the research results to the farmers, private sector etc. (end-users).
7. Building networks, to facilitate collaboration, knowledge sharing etc.
8. Build capacity for AUC to coordinate and capacity of researchers in Africa to undertake research in FNSSA priority areas
9. Generate evidence to inform policy/decision making

7 Conclusions

This study set out to establish identify and firm up priorities and topics that could possibly qualify for incorporation in a future updated version of the FNSSA Roadmap and to assess the extent to which the EU-AU FNSSA R&I Partnership, supported by projects such as LEAP4FNSSA, can help to relate and advance on these priorities.

Overall, the Roadmap for EU-Africa R&I Partnership for FNSSA is in congruence with the recent policy documents. The review did not find issues/statements and processes that contradict the recent policy documents. Equally so, all documents make reference to the appropriate Sustainable Development Goals. Regional frameworks such as CAADP and Malabo Declaration have been appropriately factored in the policy documents. However, it is worth noting that the policy documents reviewed focus on the three aspects EU/AU partnership, R&I and FNSSA as independent facets. For funding and implementation of the Roadmap, potential sources have been identified and the key actors and frameworks for implementation are outlined.

The report provides the areas of convergence, emerging issues and implications of policy thrusts to the Roadmap presented areas. Key areas of focus for consideration in a future revision of the Roadmap is an integrated approach to FNSSA and climate change, notwithstanding the Roadmap for Climate Change and Sustainable Energy Access (CCSE). Additional areas that will influence the Roadmap include:

- a) A shift towards demand led research as opposed to supply driven problem definition- key actors have a role in defining research;
- b) Integrate FNSSA with the social sciences- make research inter and multi-disciplinary;
- c) Introduce digitisation, gender and youth as cross cutting areas;
- d) Make monitoring and evaluation country specific;
- e) Consider expanded scope of institutional actors including, private sector, universities and other research institutions;
- f) Pick lessons from projects already implemented for key roles such as coordination; and
- g) African Governments/Union to define funding sources to promote ownership.

The effectiveness of the Roadmap for EU-Africa R&I Partnership for FNSSA will be dependent on the capacity of the key players in identification and execution of projects with a structured and harmonised coordination mechanism.

ANNEXES

List of Acronyms

AATS	African Agricultural Transformation Scorecard
AC	Associated Country
AfCFTA	African Continental Free Trade Area
AMR	Anti-Microbial Resistance
ARD	Agricultural Research for Development
AU	African Union
AUC	African Union Commission
AURG	African Union Research Grants
BBI JU	Bio-based Industries Joint Undertaking
BiodivERsA	ERA-Net in Biodiversity Research
BlueBio	ERA-NET Cofund on Blue Bioeconomy - Unlocking the potential of aquatic bio resources
BONUS	Baltic Organisations Network for Funding Science
CAADP	Comprehensive African Agricultural Development Programme
CAAST-Net Plus	Science, Technology and Innovation Cooperation between Sub-Saharan Africa and Europe
CAP	Common Agricultural Policy
CAP	Common Agricultural Policy
CCSE	Climate Change and Sustainable Energy Roadmap
CGIAR	Consultative Group for International Agricultural Research
CoreOrganic	Coordination of European Transnational Research in Organic Food and Farming Systems
CSA	Coordination and Support Action
DETF	Africa-European Union Digital Economy Task Force
EJP	European Joint Programme
EKLIPSE	Establishing a European Knowledge and Learning Mechanism to Improve the Policy-Science-Society Interface on Biodiversity and Ecosystem Services
ERA GAS	Cofund for monitoring & mitigation of Greenhouse gases from agri- and silvi-culture
ERA HDHL	European Research Area on Healthy Diet for a Healthy Life
ERAfrica	Developing African-European joint collaboration for Science and Technology
ERA-NET	European Research Area Networks
ESASTAP	Strengthening Technology, Research and Innovation Cooperation between Europe and South Africa
ESMERALDA	Enhancing Ecosystem Services Mapping for Policy and Decision Making
EU	European Union
EU	European Union
EuroGEOSS	European Approach to Global Earth Observation System of Systems
EXEDRA	Expansion of the European Joint Programming Initiative on Drug Resistance to Antimicrobials
FACCE Surplus	Sustainable and Resilient agriculture for food and non-food systems
FAO	Food and Agricultural Organisation of the United Nations
FNSSA	Food Nutrition Security and Sustainable Agriculture
FSHI	Food Safety Health Index
GIS	Geographic Information Systems
GMES & Africa	The Global Monitoring for Environment and Security and Africa
HBM4EU	European Human Biomonitoring Initiative

HLPD	Africa-Europe High-Level Policy Dialogue on Science, Technology and Innovation
ICT Agri2	Information and Communication Technologies and Robotics for Sustainable Agriculture
ICTs	Information, Communication Technologies
InnovAfrica	Innovations in Technology, Institutional and Extension Approaches towards Sustainable Agriculture and enhanced Food and Nutritional Security in Africa
IPA III	Pre-accession Assistance
IPR	Intellectual Property Right
JAES	Joint Africa-Europe Strategy
JPI Oceans	Joint Programming Initiatives on Healthy and Productive Seas and Oceans
JPI Water	Joint Programming Initiatives on Water challenges for a changing world
LEAP4FNSSA	The Long-term EU-AU Research and Innovation Partnership for Food and Nutrition Security and Sustainable Agriculture
LEAPAgri	A Long term EU-Africa Research and Innovation Partnership on Food and Nutrition Security and Sustainable Agriculture
M&E	Monitoring and Evaluation
MARTERA	Maritime and Marine Technologies for a New ERA
MS	Member State
NAIPs	National Agriculture Investment Plans
NARIs	National Agricultural Research Institutions
NDICI	Development and International Cooperation Instrument
NDICI	Neighbourhood, Development and International Cooperation Instrument
NGOs	Non-Governmental Organisations
OAU	Organisation of African Unity
PAEPARD	Platform for African European Partnership on Agricultural Research for Development
PAH	Partnership for Animal Health
PARC	European partnership for chemicals risk assessment
PARC	European Partnership for Chemicals Risk Assessment
PROIntensAfrica	Towards a long-term Africa-EU partnership to raise sustainable food and nutrition security in Africa
R&I	Research & Innovation
RAIPs	Regional Agriculture Investment Plans
RFOs	Research Funders Organisations
RINEA	Research and Innovation Network for Europe and Africa
RUFORUM	Regional Universities Forum for Capacity Building in Agriculture
S&T	Science and Technology
S3A	Science Agenda for Agriculture in Africa
SAI	Sustainable Agriculture Intensification
SDG	Sustainable Development Goals
SEACRIFOG	Supporting EU-African Cooperation on Research Infrastructures for Food Security and Greenhouse Gas Observations
SSA	Sub-Saharan Africa
SUSAN	Sustainable and Safe Re-use of Municipal Sewage Sludge for Nutrient Recovery
SusFood2	ERA-Net Co-fund on Sustainable Food production and consumption
VET	Vocational Education and Training
WUR	Wageningen University and Research

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